REMEDIAL INVESTIGATION REPORT- NEW POLICE STATION AND BOROUGH HALL
i.park EDGEWATER
45 RIVER ROAD
EDGEWATER, NEW JERSEY
ISRA CASE #E20040267

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1.0 INTRODUCTION

GZA GeoEnvironmental, Inc. (GZA) has prepared this *Remedial Investigation Report* (RIR) for a portion of the i.park Edgewater property located at 45 River Road in Edgewater, Bergen County, New Jersey (**Figure 1**), herein referred to as the property. This RIR applies to the portion of the property in the vicinity of the current electrical transformer and fire pump house, as depicted on **Figure 2** (Site). The Site is the proposed location for a new police station and Borough Hall for the Borough of Edgewater. This remedial investigation was conducted to address issues concerning the remaining areas of concern (AOCs) on the Site, as outlined in the NJDEP's June 30, 2006 comment letter concerning the Site and property as a whole. GZA submitted a *Remedial Action Work Plan* (RAWP) dated August 2006 for the Site, which summarized the Site-specific constituents and media of concern on an AOC by AOC basis and detailed remedial measures to be implemented at the Site to address the remaining soil and groundwater contamination. In addition, further investigation was also proposed where appropriate to further investigate and delineate all AOCs.

This document presents a brief summary of the historical and environmental issues at the Site, as well as a summary of previous investigations conducted by GZA and others (see **Section 2.0**). This report also presents the results of recent additional investigation conducted by GZA to asses the remaining AOCs at the Site, as proposed and outlined in GZA's August 2006 RAWP for the Site.

2.0 SITE BACKGROUND AND GENERAL DESCRIPTION

This section provides a brief summary of the Site history and Site-specific geology and hydrogeology. A detailed discussion was provided in GZA's January 2006 Remedial Investigation/Remedial Action Work Plan (RIR/RAWP) for the property.

2.1 Site Location and Description

The Site is part of the i.park Edgewater property located at 45 River Road in Edgewater, Bergen County, New Jersey. The Site is located in the vicinity of the current electrical transformer and is bounded to the north by the main entrance road, to the south by Building 32, to the west by River Road, and to the east by Building 3. The Site is located on Tax Assessor's Block 98 (Lot 2) **(Figure 2)**.

The approximately one-acre Site is currently developed with a portion of Building 4, an electrical substation, a gas meter house, Building 44 (formerly used for wastewater treatment), and a portion of a building formerly used to store gas cylinders, as well as a portion of the former hazardous waste storage shed.

2.2 Site History

The property is currently owned and operated by i.park Edgewater, LLC (i.park) and was formerly owned and operated by Conopco. The property, as it currently exists, was acquired by Conopco over a period of time between 1920 and 1985. The current

property consists of tax block numbers 95, 96, 97, 98, 99, and 100 moving north to south along the property. The Site is located on Tax Assessor's Block 98 (Lot 2).

Conopco began soap and edible oil manufacturing operations on the property in 1930 or 1931. Block number 98 had been acquired by Conopco in June of 1920. Sanborn Fire Insurance Maps indicate that the Bulls Ferry Chemical Company existed on the parcel from at least 1909 to some time between 1911 and 1930. GZA has been unable to ascertain the exact nature of the operations of the Bulls Ferry Chemical Company from a review of available historical documents.

Through the 1930's and 1940's, Conopco constructed Buildings 1, 2, 4, 5, and 6 and expanded its manufacturing operations onto blocks 97 and 98. Conopco also constructed nitrogen and/or hydrogen gas producing, holding and purification structures to complement its operations. Numerous ASTs were also constructed to hold cottonseed oil, No. 6 fuel oil, and caustic materials. The property continued to operate as a manufacturing facility up until approximately 1978, when these operations were phased out.

From 1978 to 1983-1984 the manufacturing buildings were generally unused and beginning to deteriorate. From 1983 to 1984 Conopco undertook a demolition project that involved the demolition of the manufacturing buildings and ASTs that existed on block numbers 96, 97, and 98. A new phase of construction in the early to mid-1980s resulted in the layout of the property as it currently exists and transformed the property to strictly research and development operations. Recent construction in 1996 and 1997 included the new consumer test center and the pH Neutralization building. Around 1997, the western portion of the property was lost by condemnation for the relocation of River Road. This coincided with the resurgence in redevelopment of property along the Hudson River waterfront that continues to this date. This redevelopment constitutes a shift from industrial and manufacturing land use to residential and commercial land use.

2.3 Geological Setting

Edgewater is located in the southern portion of Bergen County and falls within the Piedmont Physiographic Province which lies east of the Ramapo River Valley. This physiographic province is characterized by gently sloping and rolling topography including less rugged hills (as compared to the northwest portion of the county) that are generally elongated in a northeast to southwest direction. Overlying the bedrock are Quaternary age unconsolidated deposits of stratified and unstratified drift deposited by the Wisconsin Glacier. These deposits are typically thickest in valleys and low-lying areas and thinnest on steep slopes and on the tops of ridges. At the ground surface, Holocene sediments, the most recent deposits in Bergen County, consist of stream alluvium, freshwater marsh and swamp deposits, and tidal marsh sediments. The Soil Survey of Bergen County, New Jersey has identified the surficial soils in the vicinity of the Site as UR – Urban land. These soils are irregular in shape and exhibit slopes of one to five percent. Typically these soils have been cut, filled and reworked.

Based on a review of the U.S. Geologic Survey Map, Central Park, N.Y.-N.J., 1995, elevations on and within the vicinity of the Site are approximately 15 feet above mean sea level (MSL). The Palisades abruptly rise to elevations of approximately 150 to 200 feet above MSL just a few hundred feet west of the Site.

Nearby surface water bodies include the tidally influenced Hudson River, which bounds the property to the east and flows south into New York Harbor. The Hudson River is topographically downgradient of the Site and receives runoff from the Site. The Hudson River is a major navigable waterway that is also used for recreational purposes such as boating and fishing. Southwest of the Site and on top of the Palisades is a reservoir that is located in North Hudson Park. This reservoir is not downgradient of the Site and is the only other surface water body in close proximity to the Site.

2.4 Hydrostratigraphic Units and Groundwater Flow

Groundwater on the Site occurs within the pore space of the unconsolidated fill and soils and in the bedrock. Four hydrostratigraphic units (zones) have been identified from the ground surface down as follows: 1) fill material, 2) clay/silt, 3) sand (localized), and 4) bedrock. The upper zone consists of approximately 5 to 18 feet of fill with an intermittent two- to seven-foot thick fine to medium sand layer at its base. The upper zone is underlain by a lower permeability organic silt layer approximately 30 to 60 feet thick. Localized sand zones occur beneath the organic-silt aquitard. Bedrock was encountered at depths of 57 to 87.5 feet below ground surface (bgs).

The water table varies from approximately 3.5 to 5 feet bgs at the Site. Groundwater flow is generally from west to east toward the Hudson River, although the flow direction shows some variation (**Figure 3**). These variations are possibly due to subsurface heterogeneities in the fill material, as well as current and former subsurface utilities. Recharge is expected to be especially significant at the base of the Palisades escarpment, approximately 400 feet west of the Site, where the amount of infiltration from runoff is expected to be relatively high. Vertical hydraulic gradients between the upper and lower groundwater zones at the Site show an upward gradient in two of the three monitoring well couplets installed on the property.

The Hudson River is tidally influenced near the Site with a three to six-foot range in maximum water level fluctuations across a tidal cycle. The tidal fluctuations in the river cause a pressure front that "moves" through the aquifer and affects the shallow water table beneath a portion of the Site. The zone of tidal influence appears to be relatively narrow (0.34 foot effect measured in a well located 50 lateral feet from the river, and little to no measurable effect in two wells located 420 and 550 lateral feet from the river).

3.0 ENVIRONMENTAL SUMMARY

The following section presents a summary of the environmental conditions at the Site and is based on investigation activities detailed in the following documents:

- *Preliminary Site Assessment Report*, prepared by Langan Engineering and Environmental Services, Inc. dated April 2003;
- *Site Investigation Report Part 1*, prepared by Langan Engineering and Environmental Services, Inc., dated June 2003;
- *Site Investigation Report Part 2*, prepared by Langan Engineering and Environmental Services, Inc., dated June 2003;
- *Site Investigation Report Part 3*, prepared by Langan Engineering and Environmental Services, Inc., dated July 2003;
- *Site Investigation Report Part 4*, prepared by Langan Engineering and Environmental Services, Inc., dated May 2004; and
- *Remedial Investigation Report and Remedial Action Work Plan*, prepared by GZA GeoEnvironmental, Inc., dated January 2006.
- *Environmental Summary Report- New Police Station and Borough Hall,* prepared by GZA GeoEnvironmental, Inc., dated April 24, 2006.
- *Remedial Action Work Plan- New Police Station and Borough Hall,* prepared by GZA GeoEnvironmental, Inc., dated August 2006.

A Preliminary Assessment Report (PAR) and four Site Investigation Reports (SIR – Part 1, SIR – Part 2, SIR – Part 3 and SIR – Part 4) have been previously submitted pursuant to ISRA Case #E20030062 for the property. The PAR submitted in April 2003, initiated under the MOA program and submitted under the ISRA program, summarizes the property history and former and current operations to evaluate the possibility for potential AOCs on the property. The purpose of the SIs was to evaluate the potentially contaminated AOCs based on NJDEP requirements and guidance, professional judgment, and availability of access and area history. The NJDEP issued a comment letter dated April 6, 2004 regarding the earlier submissions of the PAR and SIRs Parts 1-3 which included the issuance of No Further Action (NFA) and conditional NFA determinations for both soil and groundwater for many of the identified AOCs. In addition, the NJDEP has concurred that the property is underlain by historic fill material (HFM), meeting the definition found in the *Technical Requirements for Site Remediation*, N.J.A.C. 7:26E (TRSR). However, the April 6, 2004 NJDEP correspondence raised certain requests for clarification and additional information. In addition, i.park received further additional comments from the NJDEP dated February 24, 2005, concerning SIR – Part 4 and the Langan Engineering and Environmental Services, P.C. (Langan) response to previous NJDEP comments. The responses to these comments were incorporated into GZA's *Remedial Investigation Report/Remedial Action Work Plan* (RIR/RAWP) dated January 2006. GZA submitted an *Environmental Summary Report* specific to the Site to the NJDEP in April 2006. The NJDEP issued comments to GZA's RIR/RAWP and the Environmental Summary Report dated June 30, 2006. The NJDEP's comments regarding additional investigation and recommended remedial actions for AOCs at the Site were addressed in GZA's August 2006 *Remedial Action Work Plan-New Police*

Station and Borough Hall. The results of the additional investigation are presented in **Section 5.0** below.

3.1 Site Specific Constituents of Concern

Several cottonseed oil ASTs, a rail spur, portions of a former gas plant facility, a wastewater treatment facility (Building 44), and a hazardous waste storage pad formerly occupied portions of the Site. An electrical substation is currently located on the northwest section of the Site. Between 2001 and 2006, 18 soil borings (B-2, B-6, GZA-31, GZA-64, GZA-65, GZA-66, GZA-67, GZA-68, LB-7, LB-8, LB-33, LB-34, LB-35, LB-36, LB-37, SB-4, SB-22, SB-23) and three monitoring wells (MW-4, MW-23, and MW-26) were installed at the Site (**Figure 4**). Soil and groundwater samples collected from the borings and monitoring wells were analyzed for a variety of parameters including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, pesticides, total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and cyanide.

The fill under the property and Site, which extends from land surface to the top of the native soils (approximately 12 feet bgs), has been characterized as historic fill as defined in the TRSR N.J.A.C. 7:26E-1.8. HFMs in New Jersey have been found to contain arsenic, beryllium, cadmium, lead, zinc, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)pyrene at concentrations significantly above the NJDEP Soil Cleanup Criteria. Maximum values of historic fill concentrations are provided in Table 4.2, presented in N.J.A.C. 7:26-4.6(b)6. Laboratory analytical results for the soil samples indicated polynuclear aromatic hydrocarbons (PAHs) and metals (antimony, arsenic, lead, and thallium) present above NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) and consistent with historic fill contaminant concentrations listed in the NJDEP TRSR

3.11 Previous Soil Analytical Testing Results

VOCs, metals, cyanide, and PCBs were detected in the soil samples below the RDCSCCs (**Figure 5**). Soil samples collected in the area of the current transformer indicated no detectable concentrations of PCBs in the surface soils. A low level of PCBs (0.84 parts per million (ppm) was detected in boring MW-26. This concentration is below the Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) of 2 ppm, and the NJDEP has agreed that this level is consistent with historic fill found across the property. A summary of metals concentrations in soil samples collected at the Site is included below.

	Antimony (mg/kg)	Arsenic (mg/kg)	Lead (mg/kg)	Thallium (mg/kg)
mean	20	57	301	2.2
median	11	26	99	0.5
minimum	Not detected	8.8	18	Not detected
maximum	70	250	1280	14
Typical HFM maximum concentration	No Criteria	1,080	10,700	No criteria

3.12 Previous Groundwater Analytical Testing Results

Groundwater samples were collected from monitoring wells MW-4 and MW-23 during five different sampling events from 2001 to 2004, and from MW-26 during three different sampling events from 2003 to 2004. VOCs and SVOCs detected above GWQC included benzene, naphthalene, and 2,4-dimethylphenol, which were detected in monitoring well MW-26. Benzene was detected above NJDEP standards in monitoring well MW-4, downgradient of MW-26, in 2001 and 2003 at concentrations two orders of magnitude lower. In addition, benzene was not detected in MW-4 during the latest sampling event in 2004. Pesticide compounds (aldrin and alpha-BHC) were also detected above NJDEP GWQC in monitoring well MW-4 during the 2001 and 2003 sampling events, but these compounds were not detected in the latest groundwater sample from this well collected in December 2004.

PCBs were detected in MW-4 during the 2004 sampling event; however, this was likely due to an error introduced during sampling (such as increased turbidity), as PCBs were not detected above GWQC during any of the four previous sampling events from MW-4 or in any of the other wells at the Site. Subsequent sampling performed by CH2M Hill in August 2006 as part of the investigation of the Quanta Resources property indicated no PCBs were detected in the groundwater (**Table 1** and **Appendix A**). No compounds, other than metals, were detected above GWQC in samples collected from monitoring well MW-23 (**Figure 6**).

Analytical results from all three monitoring wells (MW-4, MW-23, and MW-26) indicated concentrations of several metals above NJDEP Groundwater Quality Criteria (GWQC). Concentrations of metals in groundwater across the Site are typical of the property as a whole and concentrations for metals in Site soils are well within NJDEP's values for typical HFM. As requested in NJDEP's June 30, 2006 comment letter, concentrations of metals in soil and groundwater across the property were examined for correlations. Contour maps showing concentrations of arsenic and lead, the main metals of concern at the Site, are presented in **Figure 7** and discussed in **Section 5.0** below.

3.13 Previous Observations of Pitch/Asphaltic Material

As reported in GZA's RIR/RAWP, an area of pitch/asphaltic (P/A) material resulting from previous filling and grading at the property was found in the fill material at various locations across the property, and is assumed to extend across the southern portion of the Site where the proposed parking lot is to be located (**Figure 9**). P/A material was encountered in almost all the borings south of the electrical transformer; however, soil analytical results indicated that concentrations of PAHs and metals were generally found in concentrations typical of historic fill in the region and across the property (**Figure 5**). SB-4 was the only boring advanced to native material within the proposed building footprint and no P/A material was observed in this boring. Additional borings were advanced to assess the potential presence and extent of the P/A material within the building footprint (see **Section 5.0**).

3.2 Site Specific Areas of Concern

As is typical of complex historic industrial properties, the various former operations at the Conopco property involved the use, storage, and production of raw materials, finished products, hazardous wastes and petroleum products. The PAR discussed the various facility operations, and identified potential AOCs. The AOCs located on the Site are depicted on **Figure 8** and include 1c1, 1e17, 2c, 4, 8b, 13, 14b, 15c, 16b, 18, and 22. To date, NFA determinations have been issued for AOCs 1c1, 2c, and 22. Additional investigation and delineation of the remaining AOCs were outlined in GZA's RAWP for the Site. Much of the additional investigation focused on delineating the horizontal extent of the P/A material and further evaluating groundwater impacts at the Site. However, due to the amount of data collected to date, the additional investigation did not alter the proposed remedial actions outlined in the RAWP. The proposed sampling plan as well as the results of the investigation is presented in **Section 5.0** on an AOC by AOC basis.

4.0 TECHNICAL OVERVIEW

The field investigation activities were performed in accordance with the NJDEP *Field Sampling Procedures Manual* (May 1992), the TRSR, and the Site-specific health and safety plan (HASP) attached as **Appendix B**.

This section describes the Site investigation activities performed by GZA during the months of June, August, and September 2006. The results of the Site investigation activities will be evaluated in **Section 5.0.**

4.1 Geophysical Survey

A geophysical survey was conducted on August 15, 2006 by Hager-Richter GeoScience Inc. (H-R) in an attempt to locate a possible septic tank or leach field. The geophysical survey was conducted in the area east of the current electrical transformer, where historic maps indicated the potential presence of the septic

tank/leach field, using two complementary geophysical methods, time domain electromagnetic induction (EM61) and ground penetrating radar. A report prepared by H-R detailing the geophysical methods used, the area of interest surveyed, and the results of the investigation and is included as **Appendix C**. No evidence of the septic tank or leach field was observed.

4.2 Soil Boring Investigation

The soil investigation consisted of the drilling of 27 soil borings and the collection of soil samples from these borings. Due to the presence of numerous subsurface utilities some boring locations were vacuum excavated by Summit Drilling Company, Inc. (Summit) of Bound Brook, New Jersey to approximately five feet bgs. The excavated soils were visually inspected for evidence of contamination and pertinent observations, if any, were noted in the soil boring logs attached as **Appendix D**.

The soil borings were advanced by Summit and by Aquifer Drilling and Testing, Inc. of New Hyde Park, New York using one of two methods. The first method consisted of hydraulic direct push technology using a Geoprobe™ equipped with a two-inch inside diameter macrocore soil sampling unit with an acetate liner sleeve. The macrocore soil sampler retrieved soil from soil borings advanced in five-foot increments until the native silt/clay layer was encountered, the desired sampling depth was reached, or refusal.

The second method consisted of hollow-stem auger drilling technology using a drill rig equipped with a three-inch inside diameter split-spoon sample barrel. The split-spoon sample barrel retrieved samples at continuous two-foot intervals until the native silt/clay layer, or until bedrock or refusal was encountered.

The soil sampling methodology included AOC-specific sampling to investigate and delineate the AOCs on the Site and address the NJDEP's June 30, 2006 comment letter. Soil sampling depths were based on the specific AOC being investigated and/or were biased to the suspected location of greatest contamination based on field screening (Table 2). In an effort to adhere to this sampling methodology, soils were inspected for visual and olfactory evidence of contamination and screened with a photoionization detector (PID) equipped with a 10.6 eV lamp and calibrated to a 100 ppm isobutylene in air standard. Soil samples were collected from an approximate six-inch interval within the soil core. In some circumstances, due to poor recoveries, the sample volume was limited and the sampling interval was increased.

The VOC fraction was collected first in accordance with TRSR using five gram EnCore samplers or field extracted using methanol according to the procedure outlined in the *Methodology for the Field Extraction/Preservation of Soil Samples with Methanol for Volatile Organic Compounds* (February 1997, updated February 2003). After the VOC fraction was collected, the soil samples for the remaining parameters were collected in laboratory supplied glassware. Soil samples were stored in a cooler, maintained at approximately 4 °C and delivered to either ChemTech or STL by the laboratory courier under chain of custody procedures in the field.

4.3 Geoprobe/Temporary Well Point Investigation

The Geoprobe groundwater investigation consisted of collecting six groundwater samples. Samples GZA-64, GZA-65, GZA-66, GZA-67, GZA-68, and GZA-69 were collected on June 1, 2006 from temporary well points. Following advancement of the borings to the native silt/clay layer, 0.01-inch slotted PVC screen was inserted into the bore holes. The temporary well points were than sampled immediately after installation and removed from the boring following sampling. Prior to sampling, three to five well volumes of groundwater were purged from the well points using a peristaltic pump. Following purging, the groundwater samples were collected using dedicated HDPE bailers. Groundwater samples for dissolved metals analysis were filtered through a 0.45 micron filter. Groundwater was then decanted into laboratory supplied glassware for subsequent laboratory analysis.

Groundwater samples were transported by laboratory courier to ChemTech of Mountainside, New Jersey, a New Jersey certified laboratory. Groundwater samples were analyzed for VOC+10, BN+15, and PP metals (total and dissolved) in accordance with EPA Methods 8260, 8270, and 6000/7000 series.

4.4 Groundwater Monitoring Well Installation

The borings of monitoring wells GZA-73/MW51, GZA-93/MW-52, and MW-53 were advanced to one or two feet into the native silt/clay layer, or to a depth of approximately 12 to 16 feet bgs. The wells were constructed of two-inch diameter, 0.010-inch slotted PVC screened from the top of the native silt/clay layer to two feet bgs. The annular space around the screen and riser was backfilled with No. 2 filter sand to approximately two feet above the top of the screen. The remaining annular space was backfilled with bentonite and grout and the wells were finished at the ground surface with a locking grip cap, keyed-alike lock and flush mount protective casing with a concrete pad. The wells were developed using a submersible pump to flush out the well screen and filter sand pack until silt free water was observed. Monitoring well construction logs are provided in **Appendix D**.

4.5 Groundwater Monitoring Well Sampling

GZA collected groundwater samples from the three monitoring wells (GZA-73/MW51, GZA-93/MW-52, and MW-53) on October 7, 2006 using low-flow purging and sampling methods described in NJDEP's *Low Flow Purging and Sampling Guidance* dated December 2003. Groundwater samples were collected from five feet below the water table, which corresponds to the approximate centerline of the sample zone. A stainless steel submersible, positive-displacement pump with controller and dedicated tubing was used to perform the groundwater sampling. The wells were purged and sampled at a flow rate of between 100 to 500 milliliters per minute (mL/min). Water quality parameters, including pH, specific conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential (ORP), were measured approximately every five minutes during the purge process at each

well using a multi-parameter water quality meter. Purging ceased when all or most field parameters stabilized to within the range specified in the NJDEP guidance document. Low-flow sampling logs are provided in **Appendix E**. Sample containers were then filled, sealed, and preserved on ice. The samples were delivered via laboratory courier to Severn Trent Laboratories, Inc. of Shelton, Connecticut for analysis of Priority Pollutants plus 40 scans (PP+40).

4.6 Casing Elevation Survey

New Jersey-licensed surveyors located and surveyed the measurement point for each of the three newly installed monitoring wells at the Site. The latitude and longitude of each feature was measured to the nearest one-tenth of a second and the elevation of each feature was measured to one-hundredth of a foot. The elevation of each monitoring well was referenced to on-site datum NAVD 1988. Well Forms A and B are provided in **Appendix F**.

5.0 EVALUATION OF AREAS OF CONCERN

A summary of the borings and wells completed on an AOC by AOC basis is presented in **Table 2**. A summary of the analytical results for soil and groundwater samples collected at the Site is presented as **Figures 5 and 6**, respectively.

1e17: Unknown Chemical ASTs

One unknown chemical AST is depicted on the north side of the electrical substation. Borings LB-8 and B-6 were previously advanced 30 and 105 feet, respectively, east of the tank location. As reported in GZA's RAWP, laboratory results were generally consistent with fill material found on the property. However, since a boring was not advanced in the footprint of the former AST, GZA proposed to advance one boring and collect a soil sample from three to four feet bgs for analysis of PP+40 and TPH. However, this boring could not be advanced due to the presence of subsurface utilities related to the current electrical substation.

As shown on **Figure 5**, the former tank was located within the area of the proposed building footprint. As stated in GZA's RAWP, the building footprint will be excavated to native material. Therefore, i.park requests that no further action be required for the portion of AOC 1e17 located at the Site.

4a: Former Hazardous Waste Storage Pad

The former hazardous waste storage pad was closed and removed in 1992 and a closure report was prepared. Post-excavation closure samples exhibited elevated levels of PAHs. Although no specific reference to P/A material was documented during the closure, both i.park and Conopco have documented P/A material throughout the area formerly occupied by the hazardous waste storage pad. The concentrations of PAHs detected in the post excavation soil samples are generally consistent with this material. Therefore, GZA proposed to advance one soil boring in this area to native

material to confirm that the P/A material is present. This AOC will then be investigated, delineated, and remediated concurrent with the P/A material.

One boring (GZA-88) was advanced in the area of the former hazardous waste storage pad. Soils consisted of fill material to 20 feet bgs. Taffy-like P/A material was observed in cuttings from the upper five feet. Two inches of hard P/A material was observed in the bottom of the 15 to 17 foot split spoon sample. This could have represented slough, as no other P/A material was observed below five feet. The native organic silt/clay was encountered at 20 feet bgs. A sample of the taffy-like P/A material was collected from the upper five feet and analyzed for PP+40. As shown on **Figure 5** and in **Table 3**, the P/A material contained several SVOCs above NJDEP SCC as well as arsenic. PCBs were detected at 2 ppm, above the RDCSCC but below the NRDCSCC. The NJDEP has previously acknowledged that fill material across the Site can contain PCBs at concentrations of 2 ppm and lower. No other metals, VOCs, or pesticides were detected above the SCC. As stated in GZA's RAWP, the elevated levels of PAHs in the post-excavation closure samples collected in 1992 are consistent with those detected in the P/A material. Therefore, GZA proposed to excavate the upper five feet of soils in the vicinity of boring GZA-88 in order to remove the taffy-like material that has the potential to breach the surface in this area.

8b and 8c: Trenches, Piping, and Sumps

A small portion of the process sewer is depicted on the northeastern portion of the Site (AOC 8b) and a concrete sump is located on the south side of Building 4 (AOC 8c). As reported in GZA's RAWP, boring LB-7 was advanced in the area of the process sewer and analytical results were consistent with fill material on the property. The sump was in good condition and no evidence of subsurface impacts was observed. In addition, all sumps were designed to convey process waste or sanitary waste and, to the best of i.park's knowledge, no hazardous substances were discharged through process waste or sanitary waste streams. However, GZA proposed to collect one soil sample from immediately below the bottom of the sump for analysis of PP+40 to confirm no subsurface impacts have resulted from the sump.

GZA-74 was advanced within two feet of the concrete sump located on the south side of Building 44. No evidence of subsurface impacts was observed in the soil samples. One sample was collected from immediately below the sump (8 to 8.5 feet bgs) and analyzed for PP+40 compound list. PAHs (benzo(a)anthracene, benzo(b)fluoroanthene, benzo(k)fluoroanthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene) were detected above NJDEP SCC. However, the concentrations ranged from 1.7 to 6.6 parts per billion (ppb), below the maximum values for historic fill listed in Table 4-2 of the TRSR and were generally consistent with the concentrations found in HFM across the property.

Arsenic, at a concentration of 153 ppm, was the only other compound detected above NJDEP SCC. This concentration was also below the maximum value for historic fill listed in the TRSR and consistent with the HFM found across the property.

Based on the above observations and analytical results, it appears that no impact to the subsurface has resulted from the sump. i.park requests a no further action determination for the portion of AOCs 8b and 8c located on the Site.

13: Drywells and Sumps

In the PAR, Langan referenced the presence of drywells associated with a former gas plant located in the vicinity of the current electrical transformer and submitted the plan entitled Sewers, Steam, Fuel Oil and Gas Lines, dated 1931, prepare by Stone and Webster Engineering Corporation. This plan depicted several drywells adjacent to the former ASTs and along piping runs on the northern portion of the Site (**Figure 4**). GZA proposed to advance soil borings to native soils at each drywell location (six total) and collect a soil sample from the first six-inch interval beneath the bottom of the sump (approximately eight feet bgs) for analysis of PP+40.

One soil boring was attempted at each of the six drywells associated with the three former ASTs located on the northern portion of the Site. However, two of the borings (GZA-69 and GZA-80) could not be advanced due to the presence of subsurface utilities. At the remaining four locations (GZA-77, GZA-78, GZA-79, and GZA-80), one soil sample was collected from the first six-inch interval beneath the drywell structure (8-8.5 feet bgs) and analyzed for PP+40.

PAHs were detected above NJDEP SCC, but below the maximum values for HFM, in samples collected at GZA-77 and GZA-80. Concentrations in GZA-80 were also below the average values for HFM. PAHs or other SVOCs were not detected above applicable standards in any of the other soil samples collected. Metals, including antimony, arsenic, lead, and thallium, were detected above NJDEP SCC in all four of the soil samples. Arsenic values ranged from 42 to 456 ppm, below the maximum value for HFM (1098 ppm) and generally consistent with HFM across the Site (see **Section 3.12**).

Based on the above analytical results, the soils in the area of the four former sumps appear to be typical of historic fill at the Site and across the property. One of the sumps that was not sampled (located at GZA-69) was located within the proposed building footprint. This area will be excavated to native material. The other sump that was not sampled (located at GZA-80) was located to the south of the current fire pump house. A sample was taken approximately 35 feet north of GZA-80, at the former location of another sump (located at GZA-81). Given that the results for the samples collected at the four former sumps were typical of HFM found at the Site and no evidence of a release was observed in any of the soil borings, GZA recommends no further action for this AOC.

14b: Gas Plant Septic Tank/Leach Field

A former septic tank or leach field is presumed to have been located on the east side of the electrical transformer. A ground penetrating radar survey was performed to assess whether the former tank/field was present **(Appendix C)**. Based on the results of the survey, no tank or leach field was found on the east side of the electrical transformer. i.park requests a no further action determination for AOC 14b.

15c: Main Expansion of Buildings 3,4,5,6,8

i.park has been unable to locate drawings depicting the three-dimensional extent of the fill material brought on-Site during the construction/expansion of the buildings. Therefore, to confirm that select existing Site samples are representative of this material, GZA proposed to collect a soil sample from immediately below the slab of Building 4 for analysis of PP+40.

On soil sample (GZA-87) was collected immediately below the slab of Building 4 and analyzed for PP+40 to assess the fill material brought on-Site during construction. Arsenic, at 43 ppm, was the only compound detected above the RDCSCC. The arsenic concentration is consistent with both the NJDEP maximum HFM concentration and the HFM that is pervasive across the property. Therefore, i.park requests a no further action determination for AOC 15c.

16b: Current Transformers/Electrical Substation

Three soil borings were advanced around the north, south, and east sides of the transformers/electrical substation. As reported in the RAWP, PCBs were not detected above RDCSCC in any of the soil samples collected. Langan had stated that due to subsurface utilities a boring could not be advanced on the west side of the transformer; however, based on further review it appeared that a shallow boring could be advanced in this area. Thus, GZA proposed to collect one soil sample for PCB analysis to address the DEP's concerns in this area.

One soil sample was collected from 1 to 1.5 feet bgs on the west side of the electrical transformer and analyzed for PCBs. PCBs were detected at 0.16 ppb, below the RDCSCC. Therefore, i.park requests a no further action determination for AOC 16b.

18: pH Neutralization Facility

Soil was previously excavated in this area. The NJDEP requested that waste disposal documentation be submitted. GZA has requested this information from Conopco and Langan several times, but this information has not yet been forwarded to us. Nonetheless, post-excavation samples demonstrated compliance with applicable standards. In addition, soil samples from the Site do not indicate a petroleum release and no compounds, other than metals, were detected above GWQC in samples

collected from monitoring well MW-23, located downgradient of the excavation area. Therefore, i.park requests a no further action determination for AOC 18.

P/A Material

In the RAWP for the Site, i.park proposed to advance 23 soil borings to the native silt/clay layer to further delineate the P/A material across the Site.

GZA observed evidence of P/A material in borings GZA-70, 72, 73, 81, 83, 85, 88, 89, 90, and 92 (**Figure 9**). Of these borings, GZA-70 was located within the proposed building foot print and GZA-90 was located just north of the proposed building footprint. GZA- 77 and 94, both within the building footprint, exhibited no evidence of P/A material. No evidence of P/A material was observed in the cuttings from the vacuum excavation activities. For the purposes of P/A material delineation, P/A material encountered was characterized based on consistency into one of the three categories below.

- Hard P/A material;
- P/A material exhibiting a certain amount of plasticity but not exhibiting the ability to flow (taffy-like); and
- Less-viscous P/A material that exhibits the ability to flow.

The hard brittle P/A material was observed predominantly on the southern portion of the Site. Analytical results from a sample of the hard P/A material (GZA-89) indicate SVOCs and metals present above NJDEP SCC. However, no VOCs were present above standards in the P/A material sampled for laboratory analysis.

The taffy-like P/A material was observed in a boring located adjacent to the hazardous waste storage shed. P/A material was observed from one to five feet bgs in this boring. However, in all other borings the P/A material was observed at depths greater than five feet bgs. The sample of the taffy-like P/A material (GZA-88) contained SVOC concentrations above those observed in the soil samples and above NJDEP's values for typical HFM. Concentrations of metals, however, were similar to those of the soil samples analyzed. No VOCs were present above standards in the taffy-like P/A material sampled for laboratory an analysis.

Based upon the boring observations, the occurrence of P/A material at the Site appears to be sporadic in some areas but occurs mainly on the southern and eastern portion of the Site. In addition, no less viscous P/A material exhibiting the ability to flow was encountered in any of the soil borings. Taffy-like P/A material was only observed near the hazardous waste storage shed (GZA-88) and around monitoring well MW-26 (GZA-70). No accumulation of P/A material has been observed to date in the monitoring well.

Based on previous borings advanced near the Site, what appeared to be a moderate to high viscosity petroleum product was observed east and downgradient of the Site.

This does not appear to impact the Site area and will be delineated and addressed during subsequent investigations of the remainder of the property.

Based upon textural evidence, none of the P/A material should exhibit the ability to flow and/or migrate at temperatures typically observed in soils at depths below five feet bgs. Taffy-like material may be able to flow when heated. In this case, due to temperature gradients, it is likely that only material close to the surface would experience temperatures sufficient to cause the material to flow vertically and breach the surface. The remainder of the material is unlikely to migrate vertically or horizontally. Therefore, i.park proposes to excavate the upper five feet of soils in the vicinity of boring GZA-88 in order to remove the taffy-like material that has the potential to breach the surface in this area.

i.park also proposes to excavate beneath the purposed building footprint. The only boring exhibiting P/A material within the building footprint (GZA-70) contained hard, crushed-up material at a depth of 7 to 11 feet bgs. The building foundation will serve as a permanent remedy to prevent direct contact with material. In addition, a passive sub-slab ventilation system will be incorporated into the design of the proposed building, thereby eliminating vapor exposure pathways. The concrete or asphalt caps will serve to prevent direct contact with material outside of the building footprint.

Metals in Groundwater

As reported in the RAWP, dissolved metals including antimony, arsenic, lead, and thallium have been detected in groundwater above NJDEP GWQC. Of these metals, arsenic and lead are typical of historic fill as defined by the NJDEP. Antimony and thallium were detected within the property specific fill material. As the metals detected in the groundwater are associated with the Site specific HFM found across the Site, GZA proposed an indefinite duration CEA in accordance with NJDEP protocol.

During this investigation, GZA analyzed five groundwater samples collected from temporary well points across the Site for total and dissolved metals. Dissolved metals exceeding GWQC included antimony, arsenic, and lead **(Table 4)**. A permanent well (MW-53) was installed on the north side of the Site at the location with the highest dissolved arsenic concentration. Two other permanent wells (GZA-73/MW-51 and MW-52) were installed on the south side of the proposed building footprint. Arsenic concentrations in these wells ranged from 359 to 2130 ppb. Antimony and lead were also detected above GWQC in the groundwater samples taken from the permanent wells.

As requested in NJDEP's June 30, 2006 comment letter, GZA used a statistical software package (Surfer) to contour both soil and groundwater exceedences of arsenic and lead **(Figure 7)**. Based on the results, there does not appear to be a correlation between the soil and groundwater concentrations of arsenic and lead at the Site. Concentrations of arsenic and lead in both the soil and groundwater are typical of the property as a whole and concentrations in the soils at the Site are within the

maximum values for historic fill listed in the TRSR. The higher groundwater concentrations on the property are found to the east, downgradient, of the Site and are therefore not expected to affect the Site in the future.

Based on the above, the proposed remedial action for metals in groundwater at the Site remains unchanged.

VOCs in Groundwater

The primary VOC of concern is benzene. Examination of historical benzene data for wells MW-4 and MW-26 at the Site indicates generally decreasing benzene concentrations. The proposed remedy for dissolved organic contaminants in groundwater at the Site was remediation by monitored natural attenuation. GZA recommended that a groundwater monitoring program be implemented to document long term trends in contaminant reduction to confirm that natural attenuation mechanisms will result in the continued reduction of dissolved VOCs. GZA also proposed the installation of two monitoring wells, one between MW-26 and MW-4 and one downgradinet of MW-4, to further examine VOCs in the groundwater.

Analytical results for the two new monitoring wells show that benzene in MW-52 was the only VOC detected above GWQC. Benzene was detected in monitoring well MW-52 at a concentration of 1.3 ppm. Monitoring well MW-4 (upgradient of MW-52) had a concentration of 1.8 ppm in a sample collected by CH2M Hill in August 2006 (**Table 1 and Appendix A**). Benzene was not detected in monitoring well MW-51 located further upgradient of MW-4. Benzene was detected in monitoring well MW-26 at 230 ppm in December 2004. Based on these results, the selected remedy for VOCs in groundwater, which was outlined in the RAWP for the Site, remains unchanged.

6.0 SOIL RE-USE SAMPLING AND CHARACTRERIZATION PLAN

Based upon the results of investigations conducted at the Site, the majority of the soil located within the proposed building footprint is composed of HFM with chemical constituents and concentrations consistent with the values listed in the NJDEP TRSR Table 4-2. Therefore, i.park proposes to re-use soils that do not exhibit organic odors, elevated PID readings, or physical presence of P/A material as backfill at other locations on the i.park Edgewater property. The re-use plan is presented below:

6.1 Soil Classification

As indicated in this report, the majority of soils in the area proposed for excavation consist of HFM. However, portions of the soils targeted for excavation do contain evidence of P/A material including physical presence of P/A material, petroleum-like odors, and elevated PID readings. Material exhibiting evidence of P/A material will be segregated and disposed of off-Site at a licensed facility. Soils that do not exhibit evidence of P/A material will be segregated, stockpiled and further evaluated as

follows in accordance with NJDEP TRSR 7:26E-6.4 in order to confirm the findings of this study:

The soil stockpile will be divided into 20 cubic yard (CY) sections. Test pits will be excavated through the depth of the soil pile for each 20 CY section and field screened with a PID and for visual evidence of P/A material at two-foot intervals. Since the estimated amount of soils proposed for re-use is 2,500 CY, GZA proposes to collect two soil samples for the first 200 CY and one sample for each 200 CY thereafter. The soil samples will be analyzed for following parameters:

1. Full Toxicity Characteristic Leachate Procedure (TCLP) pursuant to the United States Environmental Protection Agency (USEPA) SW-846 methodology, including VOCs, SVOCs, metals, pesticides, herbicides, and PCBs.

2. PP+40, including VOCs, SVOCs, metals, pesticides, PCBs, cyanide and phenols.

3. Resource Conservation and Recovery Act (RCRA) Characteristics (reactivity, corrosivity, ignitability)

The laboratory results will be compared to NJDEP Department of Solid and Hazardous Waste (DSHW) Non-Hazardous Waste Limits, the most restrictive NJDEP SCC, the NJDEP TRSR 7:26E Table 4-2 for maximum values for HFM, and the soil analytical results from soils not containing P/A material on the remainder of the property. If the soil laboratory results are consistent with HFM as defined by the NJDEP as well as the fill material located on the Site and property, the soils will be re-used as backfill in other proposed excavations beneath the south visitor parking lot, beneath the south employee parking lot, and beneath impermeable structures such as new roads, parking areas, and building foundations **(see Section 6.2 and Figure 10)**. Following receipt of the laboratory results a detailed Soil Re-Use Proposal will be submitted to the NJDEP.

6.2 Proposed Re-Use

The soils classified for re-use by the NJDEP will be used on the 45 River Road property as fill material for areas excavated to remove more mobile fractions of P/A material in the south visitor parking lot **(Figure 10)**. A RAWP for the 45 River Road property will be submitted under separate cover following completion of the remedial investigation for the property. If additional material remains following backfill on the excavation, it will be utilized in other areas as will be proposed in the RAWP for the property. We estimate that 2,500 CY of soils will be classified for re-use.

The areas targeted for the re-use of backfill will be under a mixed-use residential commercial development. Following placement of the soils as backfill the areas will be capped either with concrete, asphalt pavement, or two feet of certified clean fill. These areas will be incorporated into the site-wide deed restriction for historic fill to

be completed as part of the remedial actions for the property. Groundwater in the areas targeted for re-use occurs at depths of approximately five feet bgs as indicated by synoptic water level readings in groundwater monitoring wells. More details concerning the re-use of soils will be provided in the Soil Re-Use Proposal to be submitted following the collection and analysis of soil samples.

7.0 CONCLUSIONS

Based on previous investigations and the results presented above, i.park requests no further action for AOCs 1e17, 8b, 8c, 13, 14b, 15c, and 18. Soil analytical results from these areas indicated concentrations consistent with HFM found on the Site and property and with the values given in Table 4-2 of the NJDEP TRSR. In addition, these areas will be capped with asphalt, concrete, or two feet of certified clean fill.

Remedial actions outlined in the RAWP submitted for the Site will be implemented for AOC 4a, the P/A material, and the groundwater contamination. These include excavation of P/A material from under the proposed building footprint, excavation of taffy-like P/A material from the upper five feet near the hazardous waste storage shed, and the implementation of engineered and instructional controls (i.e., capping, deed notice, and a classification exemption area).

TABLES

Table 1
CH2M Hill Groundwater Sampling Results
45 River Road
Edgewater, New Jersey

Sample ID	NJDEP	MW-4	
Laboratory ID	Groundwater	213487-009	
Sampling Date	Quality Standards	8/18/2006	
Units	Criteria (ug/L)	ug/L	
VOLATILE ORGANIC COMPOUNDS			
Methylene chloride	3	0.46	U
cis-1 2-Dichloroethene	70	0.32	U
Benzene	1	1.8	
Toluene	1,000	0.33	
Ethylbenzene	700	4.3	
Xylenes (total)	1,000	0.6	
SEMIVOLATILE ORGANIC COMPOUNDS			
Phenol	2,000	0.2	U
2 4-Dimethylphenol	100	2	H
Naphthalene	300	1	
Acenaphthylene	NC	0.4	U
Acenaphthene	400	27	
Fluorene	300	7	
Phenanthrene	NC	2	
Anthracene	2,000	2	
Fluoranthene	300	1	H
Pyrene	200	2	
Bis(2-ethylhexyl)phthalate	3	0.7	U
Benzo(a)anthracene*	0.1	0.2	B
Benzo(b)fluoranthene*	0.2	0.07	B
Benzo(k)fluoranthene*	0.5	0.08	B
Benzo(a)pyrene*	0.1	0.09	B
Indeno(1 2 3-cd)pyrene*	0.2	0.1	B
Dibenzo(a h)anthracene*	0.3	0.07	B

Notes:

1. B- The compound was also found in the blank.
2. H- Alternate peak selection upon analytical review.
3. U- The compound was not detected at or above the reporting limit.
4. Samples were obtained from groundwater sampling conducted by CH2M Hill as part of the investigation of the Quanta Resources site.
5. Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 1
CH2M Hill Groundwater Sampling Results
45 River Road
Edgewater, New Jersey

Sample ID	NJDEP	MW-4	
Laboratory ID	Groundwater	213487-009	
Sampling Date	Quality Standards	8/18/2006	
Units	Criteria (ug/L)	ug/L	
Metals			
Antimony	6	11.6	U
Arsenic	3	245	
Chromium	70	6.1	B
Copper	1,300	3.7	U
Lead	5	2.7	U
Mercury	2	0.1	U
Nickel	100	2.4	B
Zinc	2,000	6.2	B
Pesticides			
alpha-BHC	0.02	0.18	M
beta-BHC	0.04	0.2	M
delta-BHC	NC	0.011	U
gamma-BHC (Lindane)	0.03	0.093	M
Heptachlor	0.05	0.039	U
Aldrin	0.04	0.029	U
Heptachlor epoxide	0.2	0.062	
Dieldrin	0.03	0.028	U
PCBs	0.5	ND	
Other Parameters			
Cyanide	100	NA	
Phenolics	NC	NA	

Notes:

1. B- The compound was also found in the blank.
2. M- Indicates the compound was manually integrated.
3. U- The compound was not detected at or above the reporting limit.
4. Samples were obtained from groundwater sampling conducted by CH2M Hill as part of the investigation of the Quanta Resources site.
5. Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 2
Sample Summary Table
i.park Edgewater
45 River Road, Edgewater, New Jersey

AOC	Boring	Sample Depth	Analysis
AOC 4a- hazardous waste storage pad	GZA-88	sample of taffy-like P/A material from upper 5'	PP+40
AOC 8b/c-trenchs piping and sumps	GZA-74	8-8.5'	PP+40
AOC 13- drywells and sumps	GZA-77	8-8.5'	PP+40
	GZA-78	8-8.5'	PP+40
	GZA-79	8-8.5'	PP+40
	GZA-81	8-8.5'	PP+40
AOC 15c- main expansion of Buildings 3,4,5,6,8	GZA-87	3-3.5'	PP+40
AOC 16b- current electrical transformer/electrical substation	GZA-75	1-1.5'	PCBs
P/A material	GZA-64	3.5-4'	VO+10, BN+15, PP metals
	GZA-65	3.5-4'	VO+10, BN+15, PP metals
	GZA-66	3.5-4'	VO+10, BN+15, PP metals
	GZA-67	8-8.5'	VO+10, BN+15, PP metals
	GZA-68	7-7.5'	VO+10, BN+15, PP metals
	GZA-70	N/A	N/A
	GZA-71	N/A	N/A
	GZA-72	N/A	N/A
	GZA-82	N/A	
	GZA-83	N/A	
	GZA-84	N/A	
	GZA-85	N/A	
	GZA-86	N/A	
	GZA-89	sample of hard P/A material from 8-8.5'	PP+40
	GZA-90	10-10.5"	PP+40
	GZA-91	N/A	N/A
	GZA-92	N/A	N/A
	GZA-94	4-4.5'	PP+40
	MW-53	N/A	
Metals in Groundwater	GZA-73/MW-51	8-8.5'	PP+40
VOCs in Groundwater	GZA-93/MW-52	N/A	N/A

Table 3
Soil Sample Analytical Results
I.park Edgewater
45 River Road, Edgewater, New Jersey

Sample ID Laboratory ID Sampling Date Matrix Units	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-84 X3009-1 06/01/06 SOIL mg/kg	GZA-84DL X3009-1 06/01/06 SOIL mg/kg	GZA-85 X3009-2 06/01/06 SOIL mg/kg	GZA-85DL X3009-2 06/01/06 SOIL mg/kg	GZA-86 X3009-3 06/01/06 SOIL mg/kg	GZA-87 X3009-4 06/01/06 SOIL mg/kg	GZA-88 X3009-5 06/01/06 SOIL mg/kg	GZA-88DUP X3009-6 06/01/06 SOIL mg/kg
VOLATILE ORGANIC COMPOUNDS											
Toluene	1,000	1,000	500	0.093 U	NA	0.15 J	NA	0.056 U	0.037 U	0.048 U	0.046
Methylene Chloride	49	210	1	0.15 U	NA	0.071 U	NA	0.091 U	0.059 U	0.077 U	0.074 U
Benzene	3	13	1	0.058 U	NA	0.028 U	NA	0.035 U	0.023 U	0.03 U	0.029 U
Ethylbenzene	1000	1000	100	0.098 U	NA	0.047 U	NA	0.059 U	0.039 U	0.05 U	0.049 U
Xylenes (total)	410	1000	67	0.318 U	NA	0.152 U	NA	0.193 U	0.126 U	0.165 U	0.154 U
SEMIVOLATILE ORGANIC COMPOUNDS											
Naphthalene	230	4,200	100	1.1 J	2 UD	1.8 J	3.6 UD	0.08 U	0.08 U	0.086 U	0.83
Acenaphthylene	NC	NC	NC	1.1 J	1.9 UD	1.2 J	3.4 UD	0.078 U	0.078 U	0.082 U	0.081
Acenaphthene	3,400	10,000	100	2.4	2.1 JD	18	18 JD	0.084 U	0.084 U	0.09 U	0.24
Fluorene	2,300	10,000	100	3	2.7 JD	6.7	6.2 JD	0.079 U	0.079 U	0.085 U	0.24
Phenanthrene	NC	NC	NC	28	23 D	22	21 JD	0.095 J	0.48	0.39 J	1.5
Anthracene	10,000	10,000	100	8.4 JD	7.4 JD	20	18 JD	0.071 U	0.13 J	0.12 J	0.35
Fluoranthene	2,300	10,000	100	45 E	37 D	100 E	91 D	0.15 J	0.29 J	0.61	1.3
Pyrene	1,700	10,000	100	34 E	34 D	80 E	84 D	0.11 J	0.35 J	0.48 J	0.92
Bis(2-ethylhexyl)phthalate	49	210	100	0.44 U	2.2 UD	0.8 U	4 UD	0.09 U	0.09 U	0.097 U	0.096 U
Benzo(a)anthracene	0.9	4	500	22	20 D	49	43 D	0.069 J	0.18 J	0.31 J	0.45
Chrysene	9	40	500	20	19 D	41	39 D	0.085 U	0.15 J	0.29 J	0.4
Benzo(b)fluoranthene	0.9	4	50	28	20 D	58 E	46 D	0.054 J	0.078 J	0.24 J	0.39
Benzo(k)fluoranthene	0.9	4	500	7.1	6.2 JD	15	18 JD	0.1 U	0.1 U	0.11 U	0.14
Benzo(a)pyrene	0.66	0.66	100	19	17 D	43	39 D	0.075 U	0.11 J	0.24 J	0.37
Indeno(1,2,3-cd)pyrene	0.9	4	500	8.9	9.3 JD	15	20 JD	0.11 J	0.13 J	0.42 J	0.41
Dibenz(a,h)anthracene	0.66	0.66	100	0.95 J	1.5 UD	2.2 J	2.6 UD	0.059 U	0.059 U	0.063 U	0.063
Benzo(g,h,i)perylene	NC	NC	NC	2.2 J	8.4 JD	5.5	19 JD	0.078 U	0.078 U	0.21 J	0.22
METALS											
Antimony	14	340	(h)	9.01	NA	8.63	NA	8.9	49.5	118	79.6
Arsenic	20	20	(h)	11.8	NA	332	NA	64.3	65.6	116	149
Beryllium	2	2	(h)	0.348 J	NA	0.298 J	NA	0.151 J	0.159 J	0.246 J	0.206
Cadmium	39	100	(h)	0.046 U	NA	0.665	NA	0.047 U	0.046 U	0.215 J	0.087
Chromium (total)	120,000	NC	(i)	3.42	NA	34.5	NA	4.44	1.44	11.8	8.22
Copper	600	600	(h)	24.5	NA	179	NA	16.9	7.71	56.7	31.3
Lead	400	600	(h)	76.7	NA	893	NA	110	35.3	422	223
Mercury	14	270	(h)	0.198	NA	1.3	NA	0.2	0.149	1	0.664
Nickel	250	2,400	(h)	12.2	NA	11.6	NA	3.52 J	4.7 J	22.6	10.5
Selenium	63	3100	(h)	1.340 J	NA	1.860	NA	0.482 U	0.480 U	6.900	1.990
Silver	110	4,100	(h)	1.46	NA	2.31	NA	0.694 J	0.67 J	1.58	0.94
Thallium	2	2	(h)	0.726 U	NA	4.58	NA	5.85	6.17	5.3	2.65
Zinc	1500	1500	(h)	226	NA	600	NA	5.420	13.4	145	87.4

Notes:
B- For organic samples, The compound was also found in the blank. For inorganic compounds, the result is less than the reporting limit but greater than or equal to the method detection limit.

D- The compound was analyzed at a dilution factor.
E- The concentration exceeds the calibrated range of the instrument.
J- The result is below the reporting limit or tentatively identified compound.
M- Manually integrated compound.
N- MS and/or MSD recovery exceeds the upper or lower control limits.
U- The compound was not detected at the indicated concentration.
NA- Not analyzed.
NC- No criteria.
ND- Not detected.
(h) The impact to groundwater values for inorganic constituents will be developed based on site specific chemical and physical parameters.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
** Sample of P/A material encountered in soil boring.
*** DUP082106 taken as a duplicate sample for GZA-89 (8-8.5').
Exceeds Standard
Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 3
Soil Sample Analytical Results
i.park Edgewater
45 River Road, Edgewater, New Jersey

Sample ID Laboratory ID Sampling Date Matrix Units	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-73/MW-51 (8-8.5') 213494-9 8/23/2006 soil mg/kg		GZA-74 (8-8.5') 213577-1 8/28/2006 soil mg/kg		GZA-75 (1-1.5') 213494-8 8/22/2006 soil mg/kg	GZA-77 (8-8.5') 213577-7 8/28/2006 soil mg/kg		GZA-78 (8-8.5') 213577-6 8/28/2006 soil mg/kg		GZA-79 (8-8.5') 213577-5 8/28/2006 soil mg/kg	
VOLATILE ORGANIC COMPOUNDS														
Toluene	1,000	1,000	500	0.01	U	0.56	U	NA	0.0081	U	0.0066	U	0.0059	U
Methylene Chloride	49	210	1	0.0094	JB	0.0034	JB	NA	0.0071	JB	0.0066	JB	0.0067	JB
Benzene	3	13	1	0.054	J	0.0056	U	NA	0.0081	U	0.0066	U	0.0059	U
Ethylbenzene	1000	1000	100	0.0027	J	0.0056	U	NA	0.0081	U	0.0066	U	0.0059	U
Xylenes (total)	410	1000	67	0.0047	J	0.0056	U	NA	0.0081	U	0.0066	U	0.0059	U
SEMIVOLATILE ORGANIC COMPOUNDS														
Naphthalene	230	4,200	100	6.8		0.25	J	NA	0.31	J	0.43	U	0.38	U
Acenaphthylene	NC	NC	NC	1.8	J	0.25	J	NA	0.2	J	0.43	U	0.38	U
Acenaphthene	3,400	10,000	100	22		1.3	J	NA	1.1	J	0.095	J	0.38	U
Fluorene	2,300	10,000	100	26		0.33	J	NA	0.43	J	0.43	U	0.38	U
Phenanthrene	NC	NC	NC	120		3.4		NA	0.44	J	0.099	J	0.22	J
Anthracene	10,000	10,000	100	50		1.1	J	NA	3.6		0.08	J	0.38	U
Fluoranthene	2,300	10,000	100	180		7.7		NA	1.3	J	0.43	U	0.14	J
Pyrene	1,700	10,000	100	130		8.9		NA	7.7		0.43	U	0.11	J
Bis(2-ethylhexyl)phthalate	49	210	100	10	U	0.28	J	NA	4.2		0.43	U	0.38	U
Benzo(a)anthracene	0.9	4	500	85		6.2		NA	8.6		0.43	U	0.57	J
Chrysene	9	40	500	56		6.3		NA	3.5		0.08	J	0.1	J
Benzo(b)fluoranthene	0.9	4	50	43		8		NA	3.5		0.43	U	0.38	U
Benzo(k)fluoranthene	0.9	4	500	43		6.3		NA	3.5	M	0.43	U	0.38	U
Benzo(a)pyrene	0.66	0.66	100	55		6.6	M	NA	4.4		0.43	U	0.38	U
Indeno(1,2,3-cd)pyrene	0.9	4	500	36		7		NA	4		0.43	U	0.38	U
Dibenz(a,h)anthracene	0.66	0.66	100	7.3	J	1.7		NA	0.98	J	0.43	U	0.38	U
Benzo(g,h,i)perylene	NC	NC	NC	28		7.1		NA	4.3		0.43	U	0.38	U
METALS														
Antimony	14	340	(h)	4.8	BN	7.4	BN	NA	106	N	32.1	N	28.6	N
Arsenic	20	20	(h)	433	N	153		NA	456		58.2		42.3	
Beryllium	2	2	(h)	0.64	UN	0.56	U	NA	0.89	U	0.85	U	0.82	U
Cadmium	39	100	(h)	1.3	U	1.1	U	NA	1.4	U	1.3	U	1.2	U
Chromium (total)	120,000	NC	(i)	20.4		12.3		NA	24.3		2.1	B	0.42	U
Copper	600	600	(h)	44		51.2		NA	91.7		13.5		36.8	
Lead	400	600	(h)	80.1	N	241		NA	661		52.8		44.4	
Mercury	14	270	(h)	0.095		0.18		NA	6.3		0.57		0.075	
Nickel	250	2,400	(h)	14.2		15.9		NA	42		1.3	B	0.57	B
Selenium	63	3100	(h)	2.7	B	1.8	U	NA	4.4	B	2.1	U	2	U
Silver	110	4,100	(h)	0.41	U	0.38	U	NA	0.44	U	0.42	U	0.4	U
Thallium	2	2	(h)	5.8	BN	4.7	UN	NA	9	BN	5.4	UN	5.2	UN
Zinc	1500	1500	(h)	235		107		NA	156		5	U	4.7	U

Notes:
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*** DUP082106 taken as a duplicate sample for GZA-89 (8-8.5').
Exceeds Standard
Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 3
Soil Sample Analytical Results
I.park Edgewater
45 River Road, Edgewater, New Jersey

Sample ID	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-81 (8-8.5')		GZA-87 (3-3.5')		GZA-88**		GZA-89 (8-8.5')**		DUP082106***		GZA-90 (10-10.5')		GZA-94 (4-4.5')	
Laboratory ID				213494-7		213577-2		213494-2		213494-5		213494-6		213494-10		213577-3	
Sampling Date				8/22/2006		8/28/2006		8/16/2006		8/21/106		8/21/2006		8/23/2006		8/28/2006	
Matrix				soil		soil		soil		soil		soil		soil		soil	
Units				mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
VOLATILE ORGANIC COMPOUNDS																	
Toluene	1,000	1,000	500	0.011		0.0024	J	0.19	J	20		18		0.0064	U	0.006	U
Methylene Chloride	49	210	1	0.013	JB	0.0063	JB	0.055	JB	0.25	UB	0.21	JB	0.0076	JB	0.0046	JB
Benzene	3	13	1	0.0013	J	0.0062	U	0.054	J	6.3		5.1		0.0064	U	0.006	U
Ethylbenzene	1000	1000	100	0.0017	J	0.0062	U	0.49		18		12		0.0064	U	0.006	U
Xylenes (total)	410	1000	67	0.0064	J	0.0062	U	0.49		51		40		0.0064	U	0.006	U
SEMIVOLATILE ORGANIC COMPOUNDS																	
Naphthalene	230	4,200	100	0.95		0.39	U	1900		11000		26000		2.2	U	0.61	
Acenaphthylene	NC	NC	NC	0.47	U	0.39	U	1700	U	780	U	3200	U	2.2	U	0.22	J
Acenaphthene	3,400	10,000	100	0.88		0.39	U	4300		920		2000	J	0.83	J	0.99	
Fluorene	2,300	10,000	100	0.42	J	0.39	U	2700		830		19000	J	1.9		0.25	JH
Phenanthrene	NC	NC	NC	2.1		0.098	J	18000		3900		94000		9.6		2.3	
Anthracene	10,000	10,000	100	0.64		0.39	U	5700		1200		22000	J	7.1		0.91	
Fluoranthene	2,300	10,000	100	4		0.24	J	19000		2400		61000		23		5	
Pyrene	1,700	10,000	100	3.6		0.19	J	15000		20		54000		21		4.6	
Bis(2-ethylhexyl)phthalate	49	210	100	0.24	J	0.39	U	1700	U	100	UB	430	UB	2.2	U	0.39	U
Benzo(a)anthracene	0.9	4	500	1.8		0.13	J	11000		970		21000	J	11		2.5	
Chrysene	9	40	500	1.1		0.13	J	10000		1000		23000	J	10		2.5	
Benzo(b)fluoranthene	0.9	4	50	0.7		0.15	JM	8400		440	J	15000	J	7.1		1.8	
Benzo(k)fluoranthene	0.9	4	500	0.5		0.17	J	8500		580	J	14000	J	7.6		1.8	
Benzo(a)pyrene	0.66	0.66	100	0.82		0.16	J	10000		780		18000	J	9		2.5	
Indeno(1,2,3-cd)pyrene	0.9	4	500	0.8		0.13	J	7600		610	J	8800	J	6.2		2.4	M
Dibenz(a,h)anthracene	0.66	0.66	100	0.17	J	0.39	U	1800		160	J	3200	U	1.3	J	0.64	M
Benzo(g,h,i)perylene	NC	NC	NC	0.7		0.11	J	8400		540	J	9500	J	5		2.1	M
METALS																	
Antimony	14	340	(h)	28.7	N	8.9	BN	2.3	BN	1.8	BN	1.5	UN	58.4	N	25.2	N
Arsenic	20	20	(h)	208	N	43		40.7		823		183		136	N	453	
Beryllium	2	2	(h)	0.79	UN	0.62	U	0.77	U	0.51	U	0.68	U	0.6	UN	0.71	B
Cadmium	39	100	(h)	1.6	U	1.2	U	1.5	U	1	U	1.4	U	1.2	U	2.4	B
Chromium (total)	120,000	NC	(l)	1.3	B	0.98	B	13.1	N	3	BN	4.4	N	11.5		21	
Copper	600	600	(h)	25.5		18.6		69	*	1080	*	198	*	44.5		253	
Lead	400	600	(h)	123	N	90.8		150	*	12.2	*	86.1	*	173	N	1560	
Mercury	14	270	(h)	0.68		0.064		0.22		1.8		1.3		0.26		1	
Nickel	250	2,400	(h)	0.79	B	0.54	U	10.3		3	B	4.2	B	4.5	B	24	
Selenium	63	3100	(h)	2.5	U	2	U	2.9	B	1.8	U	2.2	U	1.9	U	2.5	B
Silver	110	4,100	(h)	0.51	U	0.39	U	0.49	U	0.33	U	0.43	U	0.38	U	0.33	U
Thallium	2	2	(h)	6.6	UN	5.1	UN	6.4	UN	5.4	BN	5.7	UN	5	UN	12.3	BN
Zinc	1500	1500	(h)	10.3	B	4.7	U	74.3	N	37.9	N	46.6	N	41.4		5410	

Notes:
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Exceeds Standard
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Soil Sample Analytical Results
i.park Edgewater
45 River Road, Edgewater, New Jersey

Sample ID Laboratory ID Sampling Date Matrix Units	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-84DUP (4-4.5') 213577-4 8/28/2006 soil mg/kg		FIELDBLANK X3009-07 06/01/06 water ug/L		FB 213577-8 8/28/2006 water ug/L	
VOLATILE ORGANIC COMPOUNDS									
Toluene	1,000	1,000	500	0.0059	U	0.36	U	0.24	U
Methylene Chloride	49	210	1	0.0055	JB	0.43	U	1.5	
Benzene	3	13	1	0.0059	U	0.39	U	0.07	U
Ethylbenzene	1000	1000	100	0.0059	U	0.45	U	0.16	U
Xylenes (total)	410	1000	67	0.0059	U	1.66	U	0.35	U
SEMIVOLATILE ORGANIC COMPOUNDS									
Naphthalene	230	4,200	100	0.37	J	1.4		0.4	U
Acenaphthylene	NC	NC	NC	0.16	J	1.3		0.4	U
Acenaphthene	3,400	10,000	100	0.6		1.4		0.4	U
Fluorene	2,300	10,000	100	0.23	J	1.4		0.4	U
Phenanthrene	NC	NC	NC	2.6		1.4		0.4	U
Anthracene	10,000	10,000	100	1		1.4		0.5	U
Fluoranthene	2,300	10,000	100	5.3		1.2		0.6	U
Pyrene	1,700	10,000	100	5.3		1.5		0.5	U
Bis(2-ethylhexyl)phthalate	49	210	100	0.38	U	1.6		0.7	U
Benzo(a)anthracene	0.9	4	500	2.8		0.88		0.2	JB
Chrysene	9	40	500	3.3		1.7		0.5	U
Benzo(b)fluoranthene	0.9	4	50	1.8	M	0.76		0.02	J
Benzo(k)fluoranthene	0.9	4	500	2.2		1.9		0.02	J
Benzo(a)pyrene	0.66	0.66	100	3.2		1.2		0.02	J
Indeno(1,2,3-cd)pyrene	0.9	4	500	3.2	M	0.84		0.02	JM
Dibenz(a,h)anthracene	0.66	0.66	100	0.66		0.88		0.05	U
Benzo(g,h,i)perylene	NC	NC	NC	3.3	M	1.1		0.6	U
METALS									
Antimony	14	340	(h)	20.8	N	3.170	U	5.4	U
Arsenic	20	20	(h)	182		3.320	U	3.9	U
Beryllium	2	2	(h)	0.59	U	0.090	U	0.54	U
Cadmium	39	100	(h)	1.2	U	0.327	U	1.1	U
Chromium (total)	120,000	NC	(l)	11.5		0.343	U	1.3	U
Copper	600	600	(h)	64		3.640	U	4.3	U
Lead	400	600	(h)	165		2.180	U	3	U
Mercury	14	270	(h)	0.54		0.03	U	0.07	U
Nickel	250	2,400	(h)	13.3		1.560	U	1.9	U
Selenium	63	3100	(h)	1.9	U	3.040	U	5	U
Silver	110	4,100	(h)	0.38	U	1.640	U	1.1	U
Thallium	2	2	(h)	4.9	UN	3.050	U	10	U
Zinc	1500	1500	(h)	231		0.611	U	11	U

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I.park Edgewater
45 River Road, Edgewater, New Jersey

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PCBs	0.49	2	50	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides											
alpha-BHC	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.15	0.65	50	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	0.04	0.17	50	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	340	6200	50	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	2	9	50	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	340	6200	50	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	3	12	50	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	2	9	500	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Other Parameters											
Cyanide	1100	21000	(h)	NA	NA	NA	NA	NA	NA	NA	NA
Phenolics	NC	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA

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I.park Edgewater
45 River Road, Edgewater, New Jersey

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PCBs	0.49	2	50	ND		ND		0.158		ND		ND		ND	
Pesticides															
alpha-BHC	NC	NC	NC	0.0021	UB	0.00031	JB	NA		0.01	U	0.011	U	0.0028	JMB
beta-BHC	NC	NC	NC	0.013	U	0.0017	J	NA		0.01	U	0.011	U	0.0096	JM
delta-BHC	NC	NC	NC	0.013	U	0.0019	U	NA		0.01	U	0.0077	J	0.027	M
Heptachlor	0.15	0.65	50	0.013	U	0.0019	U	NA		0.01	U	0.0034	JM	0.0066	JM
Aldrin	0.04	0.17	50	0.015	U	0.0022	U	NA		0.012	U	0.013	U	0.017	M
Heptachlor epoxide	NC	NC	NC	0.013	U	0.0013	J	NA		0.01	U	0.0038	J	0.012	M
Endosulfan I	340	6200	50	0.013	U	0.0014	J	NA		0.01	U	0.011	U	0.011	M
Dieldrin	NC	NC	NC	0.026	U	0.00059	J	NA		0.02	U	0.021	U	0.0054	J
4,4'-DDE	2	9	50	0.026	U	0.0032	J	NA		0.02	U	0.021	U	0.019	U
Endrin	NC	NC	NC	0.039	U	0.0014	J	NA		0.03	U	0.032	U	0.029	U
Endosulfan II	340	6200	50	0.026	U	0.0036	U	NA		0.02	U	0.021	U	0.019	U
4,4'-DDD	3	12	50	0.026	U	0.0022	JM	NA		0.02	U	0.021	U	0.0068	JM
Endosulfan sulfate	NC	NC	NC	0.026	U	0.0036	U	NA		0.02	U	0.021	U	0.019	U
4,4'-DDT	2	9	500	0.026	U	0.0048	M	NA		0.02	U	0.021	U	0.019	U
Chlordane	NC	NC	NC	0.13	U	0.019	U	NA		0.1	U	0.11	U	0.1	U
Other Parameters															
Cyanide	1100	21000	(h)	0.779	U	0.559	U	NA		0.613	U	0.657	U	0.59	U
Phenolics	NC	NC	NC	4.7		0.62		NA		4		2.2		1.8	

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Sample ID	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-81 (8-8.5')		GZA-87 (3-3.5')		GZA-88**		GZA-89 (8-8.5')**		DUP082106***		GZA-90 (10-10.5')		GZA-84 (4-4.5')	
Laboratory ID				213494-7		213577-2		213494-2		213494-5		213494-6		213494-10		213577-3	
Sampling Date				8/22/2006		8/28/2006		8/16/2006		8/21/106		8/21/2006		8/23/2006		8/28/2006	
Matrix				soil		soil		soil		soil		soil		soil		soil	
Units				mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
PCBs	0.49	2	50	0.019	J	ND		2		ND		ND		ND		0.0083	JM
Pesticides																	
alpha-BHC	NC	NC	NC	0.002	UB	0.0021	U	0.024		0.016	JB	0.018	J	0.0019	UB	0.01	U
beta-BHC	NC	NC	NC	0.012	U	0.0021	U	0.043		0.0052	JM	0.0072	JM	0.012	U	0.01	U
delta-BHC	NC	NC	NC	0.012	U	0.00039	JM	0.016	J	0.011	J	0.047	M	0.012	U	0.01	U
Heptachlor	0.15	0.65	50	0.012	U	0.0021	U	0.026	M	0.022	M	0.033	M	0.012	U	0.01	U
Aldrin	0.04	0.17	50	0.014	U	0.00072	JM	0.018	J	0.025	M	0.01	JM	0.014	U	0.012	U
Heptachlor epoxide	NC	NC	NC	0.012	U	0.0021	U	0.013	J	0.015	JM	0.017	JM	0.0027	JM	0.01	U
Endosulfan I	340	6200	50	0.012	U	0.0021	U	0.03	M	0.021	U	0.021	U	0.012	U	0.01	U
Dieldrin	NC	NC	NC	0.024	U	0.0011	JM	0.053		0.04	U	0.04	U	0.023	U	0.02	U
4,4'-DDE	2	9	50	0.024	U	0.00088	JM	0.044	M	0.0054	J	0.011	J	0.023	U	0.0091	J
Endrin	NC	NC	NC	0.036	U	0.0061	U	0.067	U	0.014	J	0.061	U	0.035	U	0.03	U
Endosulfan II	340	6200	50	0.024	U	0.004	U	0.044	U	0.016	JM	0.029	JM	0.023	U	0.02	U
4,4'-DDD	3	12	50	0.024	U	0.004	U	0.0072	J	0.023	JM	0.032	J	0.023	U	0.0078	J
Endosulfan sulfate	NC	NC	NC	0.024	U	0.004	U	0.039	JM	0.044	M	0.066	M	0.023	U	0.02	U
4,4'-DDT	2	9	500	0.024	U	0.004	U	0.016	J	0.065	M	0.14	M	0.023	U	0.0066	J
Chlordane	NC	NC	NC	0.12	U	0.021	U	0.54	M	0.3		0.33	M	0.12	U	0.1	U
Other Parameters																	
Cyanide	1100	21000	(h)	0.722	U	0.617	U	3.07		0.608	U	0.608	U	0.706	U	0.601	U
Phenolics	NC	NC	NC	2		7.7		88		99		210		4.9		2.4	

Notes:
B- For organic samples, The compound was also found in the blank. For inorganic compounds, the result is less than the reporting limit but greater than or equal to the method detection limit.

D- The compound was analyzed at a dilution factor.
E- The concentration exceeds the calibrated range of the instrument.
J- The result is below the reporting limit or tentatively identified compound.
M- Manually integrated compound.
N- MS and/or MSD recovery exceeds the upper or lower control limits.
U- The compound was not detected at the indicated concentration.
NA- Not analyzed.
NC- No criteria.
ND- Not detected.
(h) The impact to groundwater values for inorganic constituents will be developed based on site specific chemical and physical parameters.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
** Sample of P/A material encountered in soil boring.
*** DUP082106 taken as a duplicate sample for GZA-89 (8-8.5').
Exceeds Standard
Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 3
Soil Sample Analytical Results
I.park Edgewater
45 River Road, Edgewater, New Jersey

Sample ID Laboratory ID Sampling Date Matrix Units	Residential Direct Contact Soil Cleanup Criteria (RUDCSCC) (mg/kg)	Nonresidential Direct Contact Soil Cleanup Criteria (NRUDCSCC) (mg/kg)	Impact to Groundwater Soil Cleanup Criteria (IGWSCC) (mg/kg)	GZA-84DUP (4-4.5') 213577-4 8/28/2006 soil mg/kg		FIELDBLANK X3009-07 06/01/06 water ug/L	FB 213577-8 8/28/2006 water ug/L	
PCBs	0.49	2	50	ND		NA	ND	
Pesticides								
alpha-BHC	NC	NC	NC	0.01	U	NA	0.012	U
beta-BHC	NC	NC	NC	0.01	U	NA	0.014	U
delta-BHC	NC	NC	NC	0.01	U	NA	0.0023	U
Heptachlor	0.15	0.65	50	0.01	U	NA	0.0083	U
Aldrin	0.04	0.17	50	0.012	U	NA	0.0062	U
Heptachlor epoxide	NC	NC	NC	0.01	U	NA	0.0061	U
Endosulfan I	340	6200	50	0.01	U	NA	0.0037	U
Dieldrin	NC	NC	NC	0.0044	J	NA	0.0061	U
4,4'-DDE	2	9	50	0.012	J	NA	0.0094	U
Endrin	NC	NC	NC	0.029	U	NA	0.027	U
Endosulfan II	340	6200	50	0.019	U	NA	0.013	U
4,4'-DDD	3	12	50	0.012	JM	NA	0.015	U
Endosulfan sulfate	NC	NC	NC	0.019	U	NA	0.015	U
4,4'-DDT	2	9	500	0.0062	J	NA	0.011	U
Chlordane	NC	NC	NC	0.1	U	NA	0.025	U
Other Parameters								
Cyanide	1100	21000	(h)	0.591	U	NA	1.3	U
Phenolics	NC	NC	NC	0.8		NA	0.005	

Notes:
B- For organic samples, The compound was also found in the blank. For inorganic compounds, the result is less than the reporting limit but greater than or equal to the method detection limit.

D- The compound was analyzed at a dilution factor.
E- The concentration exceeds the calibrated range of the instrument.
J- The result is below the reporting limit or tentatively identified compound.
M- Manually integrated compound.
N- MS and/or MSD recovery exceeds the upper or lower control limits.
U- The compound was not detected at the indicated concentration.
NA- Not analyzed.
NC- No criteria.
ND- Not detected.
(h) The impact to groundwater values for inorganic constituents will be developed based on site specific chemical and physical parameters.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
** Sample of P/A material encountered in soil boring.
*** DUP082106 taken as a duplicate sample for GZA-89 (8-8.5').
Exceeds Standard
Only detected parameters are included in this table. Refer to laboratory data report for complete analytical results.

Table 4
Groundwater Analytical Results
45 River Road
Edgewater, New Jersey

Sample ID	New Jersey	GZA-64		GZA-64DL		GZA-65		GZA-66		GZA-67		GZA-67RE		GZA-68		GZA-68DUP		GZA-68DUPRE	
Sampling Date	Class IIa	06/01/06		06/01/06		06/01/06		06/01/06		06/01/06		06/01/06		06/01/06		06/01/06		06/01/06	
Lab Number	Groundwater	X3050-01		X3050-01		X3050-02		X3050-03		X3050-04		X3050-04		X3050-05		X3050-06		X3050-07	
Matrix	Quality	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
Units	Criteria (ug/L)	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
VOLATILE ORGANIC COMPOUNDS																			
Methylene Chloride	3	2.4	JB	NA		0.98	U	2.5	JB	25	U	4.3	JB	0.98	U	0.98	U	NA	
Chloroform	70	0.18	U	NA		0.18	U	0.18	U	4.4	U	0.18	U	0.18	U	0.18	U	NA	
Benzene	1	0.35	U	NA		0.35	U	0.35	U	8.8	U	0.35	U	0.35	U	0.35	U	NA	
Toluene	1,000	0.38	U	NA		0.38	U	0.38	U	9.4	U	0.38	U	1.3	J	1.3	J	NA	
Ethylbenzene	700	0.50	U	NA		0.50	U	0.50	U	13	U	0.50	U	1.5	J	0.50	U	NA	
Xylenes (total)	1,000	1.1	U	NA		1.1	U	1.1	U	28	U	1.1	U	1.1	U	1.1	U	NA	
SEMI-VOLATILE ORGANIC COMPOUNDS																			
2,4-Dimethylphenol	100	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Naphthalene	300	71	E	35	D	6.7		0.650	J	0.29	U	NA		20		5.0		4.9	
Acenaphthylene	NC	0.22	U	0.45	UD	0.23	U	0.23	U	0.22	U	0.23	U	0.23	U	0.23	U	0.23	U
Acenapthene	400	6.8		3.7	JD	6.1		5.2		0.23	U	NA		11		3.3		3.3	
Fluorene	300	7.3		3.7	JD	1.2	J	0.26	U	0.25	U	NA		1.3	J	0.420	J	0.390	J
Phenanthrene	NC	20		10	D	2.5	J	0.970	J	0.380	J	NA		1.8	J	0.740	J	0.740	J
Di-n-butylphthalate	700	5.8		3.2	JD	1.2	J	0.490	J	0.24	U	NA		1.8	J	0.350	J	0.360	J
Anthracene	2,000	0.520	JB	0.52	UD	0.330	JB	0.800	JB	0.690	JB	NA		0.850	JB	0.500	JB	0.490	JB
Fluoranthene	300	9.3		5.2	D	7.4		2.0	J	0.260	J	NA		0.970	J	0.460	J	0.450	J
Pyrene	200	8.1		5.2	D	7.6		2.4	J	0.400	J	NA		0.840	J	0.490	J	0.520	J
Benzo(a)anthracene	0.1	3.7		2.4	JD	4.2		1.1	J	0.28	U	NA		0.29	U	0.29	U	0.29	U
Chrysene	5	4.5		2.7	JD	4.2		1.1	J	0.32	U	NA		0.32	U	0.33	U	0.33	U
bis(2-ethylhexyl)phthalate	3	0.670	JB	0.54	UD	0.370	JB	0.730	JB	0.670	JB	NA		0.590	JB	0.28	U	0.320	JB
Benzo(b)fluoranthene	0.2	3.5		2.1	JD	5.8		1.0	J	0.17	U	NA		0.18	U	0.18	U	0.18	U
Benzo(k)fluoranthene	0.5	1.3	J	0.840	JD	2.0	J	0.600	J	0.38	U	NA		0.39	U	0.40	U	0.40	U
Benzo(a)pyrene	0.1	2.9		1.8	JD	4.5		1.0	J	0.25	U	NA		0.25	U	0.26	U	0.26	U
Indeno(1,2,3-cd)pyrene	0.2	2.0	J	1.5	JD	3.7		0.680	J	0.21	U	NA		0.22	U	0.22	U	0.22	U
Dibenzo(a,h)anthrcene	0.3	0.17	U	0.33	UD	0.17	U	0.17	U	0.16	U	NA		0.17	U	0.17	U	0.17	U
Benzo(g,h,i)perylene	NC	1.5	J	1.3	JD	3.0		0.540	J	0.23	U	NA		0.24	U	0.24	U	0.24	U

Notes:

B- The analyte was found in the laboratory blank as well as the

D- The compound was analyzed at a dilution factor.

E- The concentration exceeds the calibrated range of the

J- Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an

M- Manually integrated compound.

U- The compound was not detected at the indicated

NA- Not analyzed.

NC- No criteria.

Exceeds Standard

Table 4
Groundwater Analytical Results
45 River Road
Edgewater, New Jersey

Sample ID	New Jersey	FIELDBLANK		FIELDBLANKRE		TRIPBLANK		MW-51		MW-52		2DUP090806		MW-53		DUP090806		FIELDBLANK		TRIP BLANK	
Sampling Date	Class IIa	06/01/06		06/01/06		06/01/06		9/7/2006		9/7/2006		9/7/2006		9/7/2006		9/7/2006		9/7/2006		9/7/2006	
Lab Number	Groundwater	X3050-08		X3050-09		X3050-10		213644-2		213644-2		213644-2		213644-1		213644-2		213644-2		213644-2	
Matrix	Quality	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
Units	Criteria (ug/L)	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
VOLATILE ORGANIC COMPOUNDS																					
Methylene Chloride	3	17	B	2.1	JB	1.8	JB	0.46	UB	0.46	UB	0.46	UB	0.51	B	NA		0.61	B	12	B
Chloroform	70	0.18	U	0.18	U	0.18	U	0.12	U	0.12	U	0.12	U	0.12	U	NA		0.35	H	0.12	U
Benzene	1	0.35	U	0.35	U	0.35	U	0.07	U	1.3		1.4		0.07	U	NA		0.07	U	0.07	U
Toluene	1,000	0.38	U	0.38	U	0.38	U	0.24	U	1.2		1.2		0.24	U	NA		0.24	U	0.24	U
Ethylbenzene	700	0.50	U	0.50	U	0.50	U	0.16	U	1.2		1.2		0.16	U	NA		0.16	U	0.16	U
Xylenes (total)	1,000	1.1	U	1.1	U	1.1	U	0.35	U	3.2		3.4		0.35	U	NA		0.35	U	0.35	U
SEMI-VOLATILE ORGANIC COMPOUNDS																					
2,4-Dimethylphenol	100	NA		NA		NA		6		13		NA		6		6		0.4	U	NA	
Naphthalene	300	0.30	U	0.30	U	NA		74		390		NA		42		39		0.4	U	NA	
Acenaphthylene	NC	0.23	U	0.24	U	NA		2	U	8	U	NA		0.8	U	0.8	U	0.4	U	NA	
Acenapthene	400	0.24	U	0.24	U	NA		28		55		NA		47		45		0.4	U	NA	
Fluorene	300	0.26	U	0.26	U	NA		12		38		NA		12		12		0.4	U	NA	
Phenanthrene	NC	0.26	U	0.26	U	NA		29		70		NA		41		38		0.4	U	NA	
Di-n-butylphthalate	700	0.25	U	0.25	U	NA		3	U	3	U	NA		1	U	1	U	0.6	U	NA	
Anthracene	2,000	0.770	JB	0.740	JB	NA		6		10	U	NA		8		9		0.5	U	NA	
Fluoranthene	300	0.23	U	0.23	U	NA		12		13		NA		13		12		0.6	U	NA	
Pyrene	200	0.25	U	0.25	U	NA		9		11	U	NA		9		8		0.5	U	NA	
Benzo(a)anthracene	0.1	0.29	U	0.29	U	NA		3		2		NA		0.8	M	0.7	M	0.01	J	NA	
Chrysene	5	0.33	U	0.33	U	NA		2	U	10	U	NA		1	U	1	U	0.5	U	NA	
bis(2-ethylhexyl)phthalate	3	0.580	JB	0.560	JB	NA		3	U	14	U	NA		1	U	1	U	0.7	U	NA	
Benzo(b)fluoranthene	0.2	0.18	U	0.18	U	NA		1		0.7		NA		0.4		0.3		0.05	U	NA	
Benzo(k)fluoranthene	0.5	0.40	U	0.40	U	NA		1		0.6		NA		0.3		0.3		0.05	U	NA	
Benzo(a)pyrene	0.1	0.26	U	0.26	U	NA		2		0.9		NA		0.5		0.4		0.05	U	NA	
Indeno(1,2,3-cd)pyrene	0.2	0.22	U	0.22	U	NA		1		0.7		NA		0.4		0.4		0.05	U	NA	
Dibenzo(a,h)anthrcene	0.3	0.17	U	0.17	U	NA		0.2	M	0.05	J	NA		0.08	M	0.07	M	0.05	U	NA	
Benzo(g,h,i)perylene	NC	0.24	U	0.24	U	NA		2	U	11	U	NA		1	U	1	U	0.6	U	NA	

Notes:

B- The analyte was found in the laboratory blank as well as the

D- The compound was analyzed at a dilution factor.

E- The concentration exceeds the calibrated range of the

J- Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an

M- Manually integrated compound.

U- The compound was not detected at the indicated

NA- Not analyzed.

NC- No criteria.

Exceeds Standard

Table 4
Groundwater Analytical Results
45 River Road
Edgewater, New Jersey

Sample ID	New Jersey	GZA-64	GZA-64DL	GZA-65	GZA-66	GZA-67	GZA-67RE	GZA-68	GZA-68DUP	GZA-68DUPRE
Sampling Date	Class IIa	06/01/06	06/01/06	06/01/06	06/01/06	06/01/06	06/01/06	06/01/06	06/01/06	06/01/06
Lab Number	Groundwater	X3050-01	X3050-01	X3050-02	X3050-03	X3050-04	X3050-04	X3050-05	X3050-06	X3050-07
Matrix	Quality	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Units	Criteria (ug/L)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS										
Antimony	6	3.170 U	NA	**56.2** J	**116**	**409**	NA	**471**	**288**	NA
Arsenic	3	**96.8**	NA	**729**	**491**	**808**	NA	**1650**	**1250**	NA
Beryllium	1	0.150 J	NA	0.300 J	0.260 J	0.480 J	NA	0.450 J	0.370 J	NA
Chromium	70	7.540 J	NA	**80.4**	14.2	20.3	NA	46.5	41.3	NA
Copper	1,300	21.5 J	NA	132	97.9	192	NA	178	104	NA
Lead	5	**93.1**	NA	**556**	**1400**	**1160**	NA	**853**	**507**	NA
Mercury	2	0.31	NA	**3.26**	1.25	89.2	NA	**5.64**	**4.75**	NA
Nickel	100	2.340 J	NA	11.0 J	4.130 J	41.4	NA	54.9	37.5 J	NA
Selenium	40	3.040 U	NA	3.040 U	3.040 U	26.6	NA	5.060 J	3.040 U	NA
Silver	NC	1.640 U	NA	1.640 U	1.640 U	1.640 U	NA	1.640 U	1.640 U	NA
Thallium	2	3.050 U	NA	3.050 U	3.050 U	**6.970** J	NA	**21.9**	**9.710** J	NA
Zinc	2,000	214	NA	319	81.3	362	NA	466	314	NA
DISSOLVED METALS										
Antimony	6	3.170 U	NA	3.170 U	**66.4**	5.660 J	NA	**38.1** J	**26.2** J	NA
Arsenic	3	**63.2**	NA	**226**	**336**	**123**	NA	**1760**	**1290**	NA
Chromium	70	5.780 J	NA	1.600 J	2.290 J	4.980 J	NA	3.620 J	4.170 J	NA
Copper	1,300	12.2 J	NA	5.720 J	5.230 J	20.3 J	NA	5.100 J	5.920 J	NA
Lead	5	**37.8**	NA	2.180 U	2.180 U	2.180 U	NA	2.180 U	2.180 U	NA
Mercury	2	0.2700	NA	0.03 U	0.03 U	0.03 U	NA	0.03 U	0.03 U	NA
Nickel	100	1.560 U	NA	1.560 U	1.560 U	2.710 J	NA	1.560 U	1.560 U	NA
Zinc	2,000	106	NA	20.0	22.8	32.2	NA	28.1	25.8	NA
Pesticides										
gamma-BHC (Lindane)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other Parameters										
Cyanide	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenolics	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

B- The analyte was found in the laboratory blank as well as the

D- The compound was analyzed at a dilution factor.

E- The concentration exceeds the calibrated range of the

J- Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an

M- Manually integrated compound.

U- The compound was not detected at the indicated

NA- Not analyzed.

NC- No criteria.

Exceeds Standard

Table 4
Groundwater Analytical Results
45 River Road
Edgewater, New Jersey

Sample ID	New Jersey	FIELDBLANK	FIELDBLANKRE	TRIPBLANK	MW-51	MW-52	2DUP090806	MW-53	DUP090806	FIELDBLANK	TRIP BLANK
Sampling Date	Class IIa	06/01/06	06/01/06	06/01/06	9/7/2006	9/7/2006	9/7/2006	9/7/2006	9/7/2006	9/7/2006	9/7/2006
Lab Number	Groundwater	X3050-08	X3050-09	X3050-10	213644-2	213644-2	213644-2	213644-1	213644-2	213644-2	213644-2
Matrix	Quality	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Units	Criteria (ug/L)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS											
Antimony	6	3.170 U	NA	NA	15.8	15.6	NA	51.4	52.6	5.8 U	NA
Arsenic	3	3.320 U	NA	NA	359	1310	NA	2130	1950	2.4 U	NA
Beryllium	1	0.090 U	NA	NA	0.3 U	0.3 U	NA	0.37 B	0.3 U	0.3 B	NA
Chromium	70	0.343 U	NA	NA	9.4 B	8.3 B	NA	8.6 B	5.7 B	1.8 B	NA
Copper	1,300	3.640 U	NA	NA	3.7 U	3.7 U	NA	3.7 U	3.7 U	3.7 U	NA
Lead	5	2.180 U	NA	NA	14.2	6.4	NA	2.7 U	2.7 U	2.7 U	NA
Mercury	2	0.0300 U	NA	NA	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	NA
Nickel	100	1.560 U	NA	NA	6.2 B	5.1 B	NA	3.1 B	2.4 U	5.3 B	NA
Selenium	40	3.040 U	NA	NA	4.2 U	4.2 U	NA	4.2 U	4.2 U	4.2 U	NA
Silver	NC	1.640 U	NA	NA	1.4 U	1.4 U	NA	1.4 U	1.4 U	1.4 U	NA
Thallium	2	3.050 U	NA	NA	1.8 U	1.8 U	NA	1.8 U	1.8 U	1.8 U	NA
Zinc	2,000	0.611 U	NA	NA	22.8 B	21.3 B	NA	10.1 B	14 B	5.8 U	NA
DISSOLVED METALS											
Antimony	6	3.170 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	3	3.320 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	70	0.343 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1,300	3.640 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	5	2.180 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.03 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	1.560 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2,000	0.611 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides											
gamma-BHC (Lindane)	0.03	NA	NA	NA	0.027 U	0.18 M	NA	0.027 U	0.028 U	0.0055 U	NA
PCBs	0.5	NA	NA	NA	0.26 U	0.26 U	NA	0.26 U	0.27 U	0.053 U	NA
Other Parameters											
Cyanide	100	NA	NA	NA	9.6	17.5	NA	2.9	3.1	0.004 U	NA
Phenolics	NC	NA	NA	NA	62	84	NA	70	64	NA	NA

Notes:

B- The analyte was found in the laboratory blank as well as the

D- The compound was analyzed at a dilution factor.

E- The concentration exceeds the calibrated range of the

J- Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an

M- Manually integrated compound.

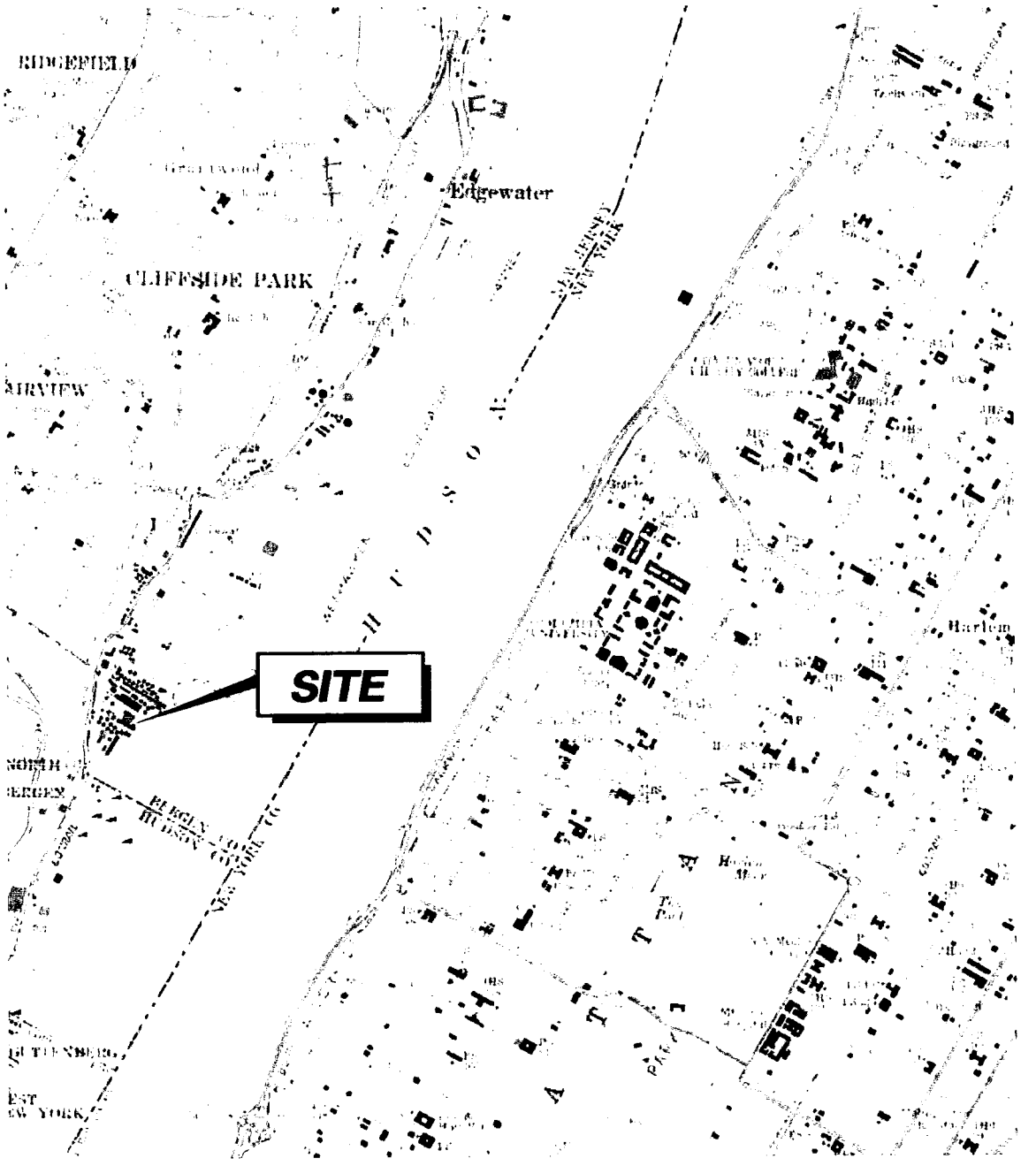
U- The compound was not detected at the indicated

NA- Not analyzed.

NC- No criteria.

Exceeds Standard

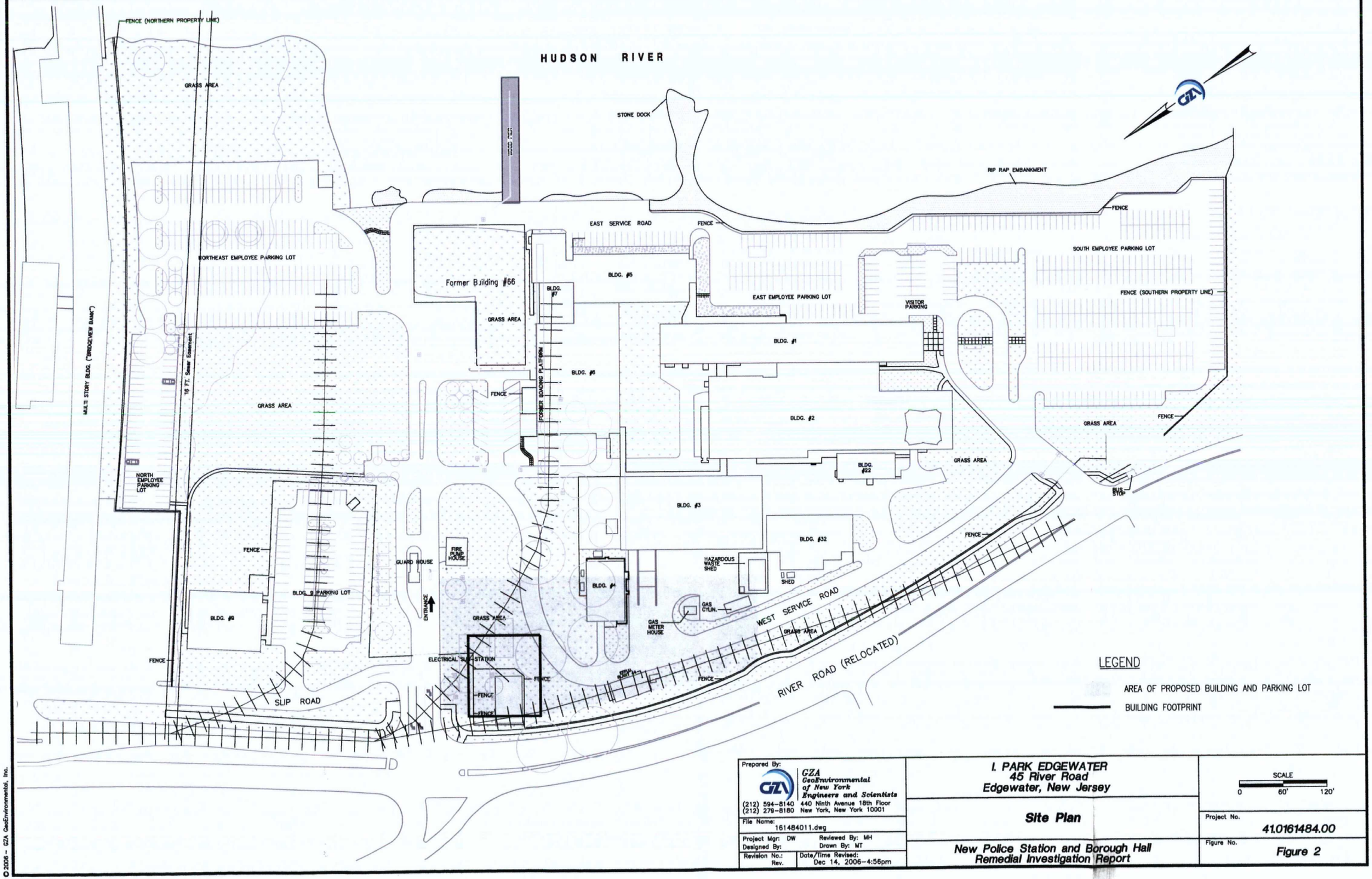
FIGURES



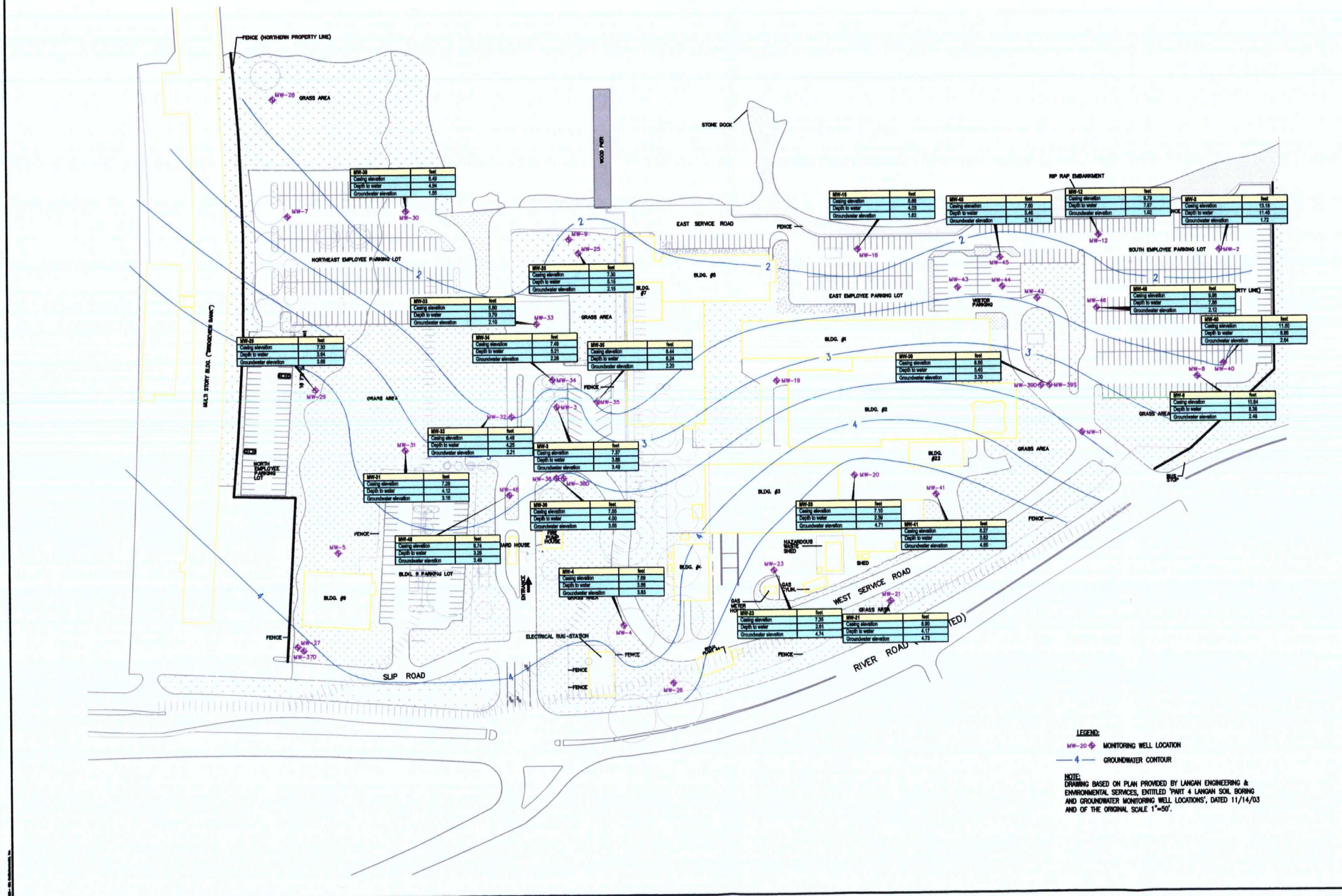
ACKNOWLEDGEMENT:
FIGURE BASED ON U.S. GEOLOGICAL SURVEY, CENTAL PARK QUADRANGLE (7.5 MINUTE SERIES TOPOGRAPHIC MAP), DATED 1966, PHOTOREVISED 1979

N

Prepared By: GZA GeoEnvironmental of New York Engineers and Scientists (212) 594-8140 440 Ninth Avenue 18th Floor (212) 279-8160 New York, New York 10001	*L PARK EDGEWATER 45 River Road Edgewater, New Jersey*	SCALE 0 1000' 2000' 4000'
File Name: 161484009.DWG	***Site Locus***	Project No. *41.0161484.00*
Project Mgr: DW Reviewed By: MH Designed By: Drawn By: MT	*New Police Station and Borough Hall Remedial Investigation Report*	Figure No. *Figure 1*
Revision No.: Rev. Date/Time Revised: Nov 08, 2006-4:18pm		



Prepared By: GZA GeoEnvironmental of New York Engineers and Scientists (212) 594-8140 440 Ninth Avenue 18th Floor (212) 279-8180 New York, New York 10001	I. PARK EDGEWATER 45 River Road Edgewater, New Jersey
File Name: 161484011.dwg	Site Plan
Project Mgr: DW Reviewed By: MH Designed By: Drawn By: MT	New Police Station and Borough Hall Remedial Investigation Report
Revision No.: Date/Time Revised: Rev. Dec 14, 2006-4:56pm	SCALE 0 60' 120' Project No. 41.0161484.00 Figure No. Figure 2



LEGEND:

MW-20 MONITORING WELL LOCATION

—4— GROUNDWATER CONTOUR

NOTE:
DRAWING BASED ON PLAN PROVIDED BY LANGAN ENGINEERING & ENVIRONMENTAL SERVICES, ENTITLED 'PART 4 LANGAN SOIL BORING AND GROUNDWATER MONITORING WELL LOCATIONS', DATED 11/14/03 AND OF THE ORIGINAL SCALE 1"=50'.

I. PARK EDGEWATER
45 River Road
Edgewater, New Jersey

Groundwater Gradient Map

Remedial Investigation Report
New Police Station and Borough Hall

Prepared By: GZA GeoEnvironmental of New York, Engineers and Scientists
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Project Mgr: DW
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Reviewed By: DW
Drawn By: EM

File Name: 161318006.DWG

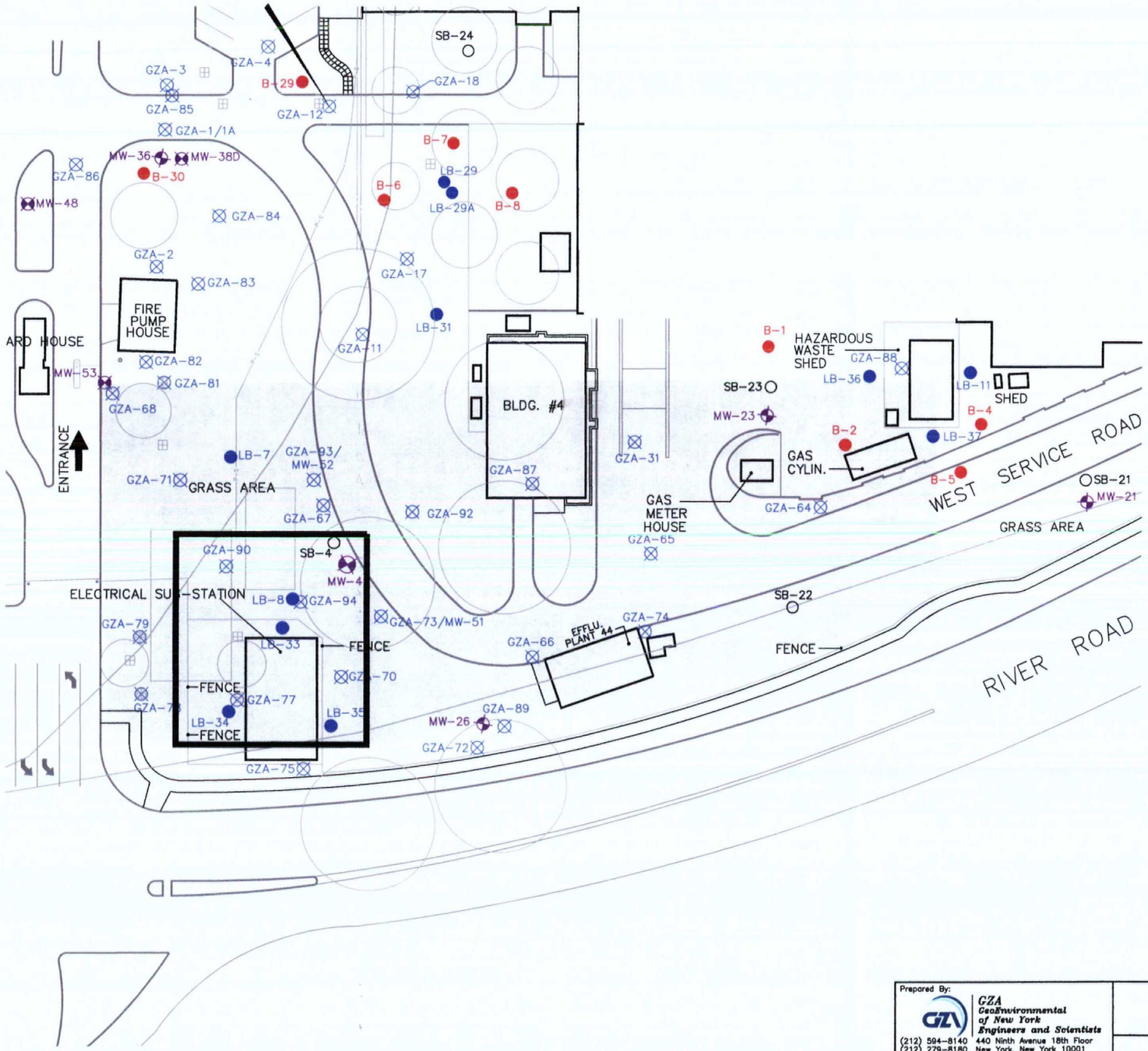
Revision No.: Rev.

Date/Time Revised: Dec 19, 2006-8:38am

SCALE 0 30' 60' 120'

Project No. 41.0161318.00

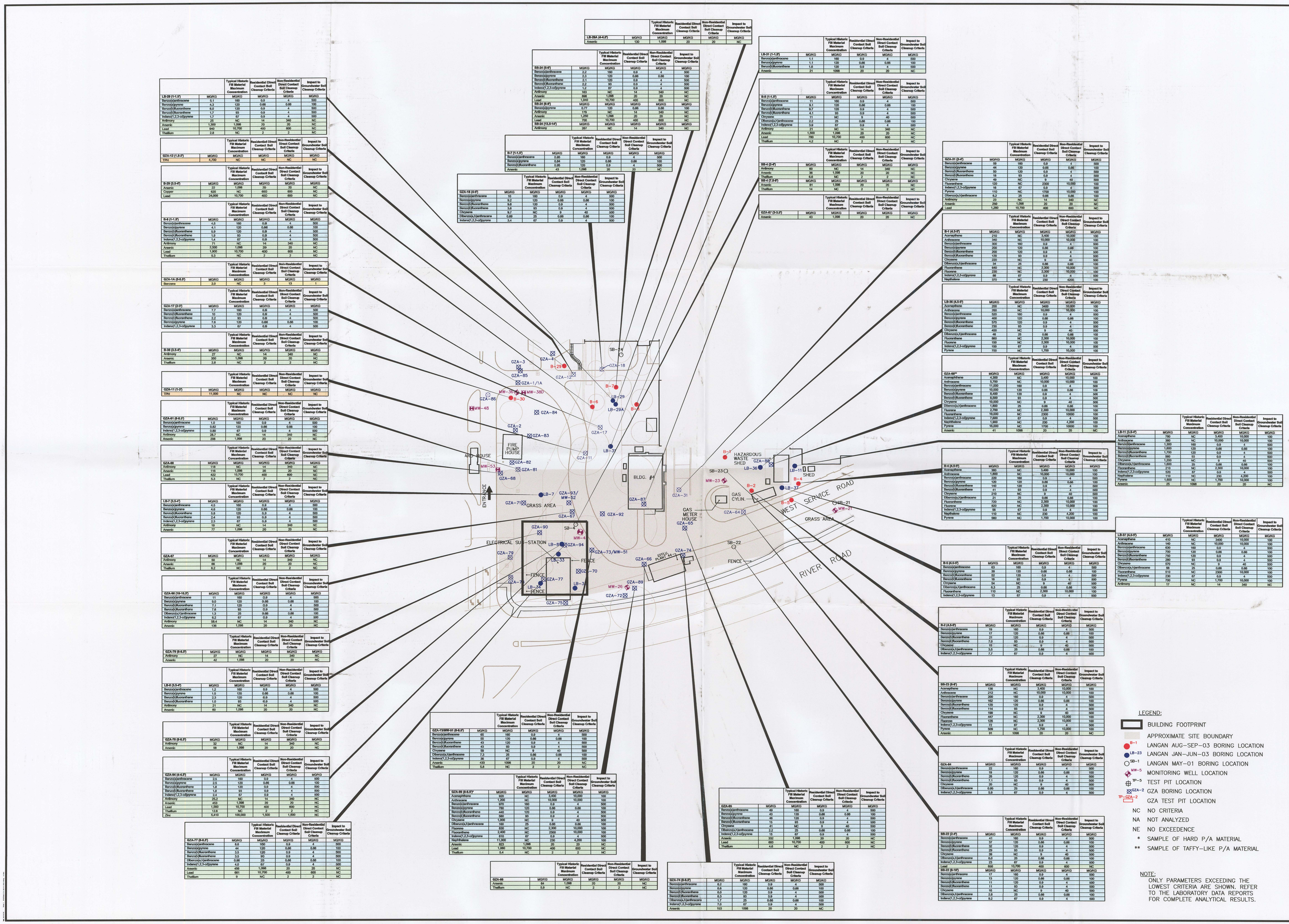
Figure No. Figure 3



LEGEND:

- BUILDING FOOTPRINT
- APPROXIMATE SITE BOUNDARY
- B-1 LANGAN AUG-SEP-03 BORING LOCATION
- LB-23 LANGAN JAN-JUN-03 BORING LOCATION
- SB-1 LANGAN MAY-01 BORING LOCATION
- MW-5 MONITORING WELL LOCATION
- TP-5 TEST PIT LOCATION
- GZA-2 GZA BORING LOCATION
- TP-GZA-2 GZA TEST PIT LOCATION

Prepared By: GZA GeoEnvironmental of New York Engineers and Scientists (212) 594-8140 (212) 279-8180 440 Ninth Avenue 18th Floor New York, New York 10001	I. PARK EDGEWATER 45 River Road Edgewater, New Jersey	SCALE 0 30' 60'
File Name: 161484015.dwg Project Mgr: DW Reviewed By: MH Designed By: Drawn By: MT Revision No.: Rev. Date/Time Revised: Dec 14, 2006-4:49pm	**Boring/Well Location Plan** Remedial Investigation Report New Police Station and Borough Hall	Project No. 41.0161484.00 Figure No. Figure 4



REV. NO.	DESCRIPTION	BY	DATE

Acknowledgment:

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File Name: 161484015.dwg

Revision No.: Rev.
Date/Time Revised: Dec 13, 2006-1:45pm

I.PARK EDGEWATER
45 River Road
Edgewater, New Jersey

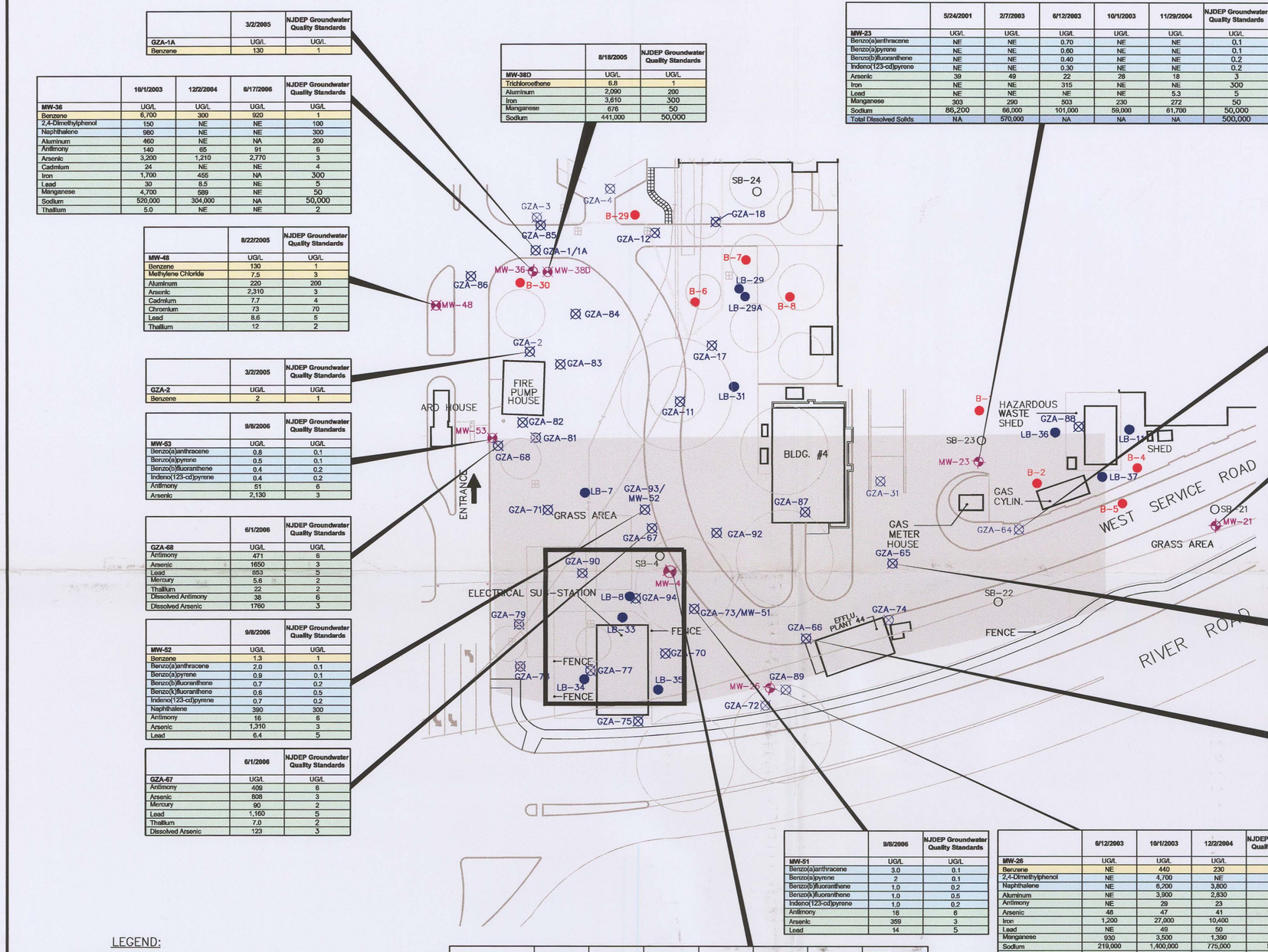
Soil Analytical Results

New Police Station and Borough Hall
Remedial Investigation Report

SCALE
0 30' 60' 120'

Project No. 41.0161318.00

Figure No. Figure 5



	3/2/2005	NJDEP Groundwater Quality Standards
GZA-1A	UG/L	UG/L
Benzene	130	1

	10/1/2003	12/2/2004	8/17/2006	NJDEP Groundwater Quality Standards
MW-36	UG/L	UG/L	UG/L	UG/L
Benzene	6,700	300	920	1
2,4-Dimethylphenol	150	NE	NE	100
Naphthalene	980	NE	NE	300
Aluminum	460	NE	NA	200
Antimony	140	65	91	6
Arsenic	3,200	1,210	2,770	3
Cadmium	24	NE	NE	4
Iron	1,700	455	NA	300
Lead	30	8.5	NE	5
Manganese	4,700	589	NE	50
Sodium	520,000	304,000	NA	50,000
Thallium	5.0	NE	NE	2

	8/18/2005	NJDEP Groundwater Quality Standards
MW-38D	UG/L	UG/L
Trichloroethene	6.8	1
Aluminum	2,090	200
Iron	3,610	300
Manganese	676	50
Sodium	441,000	50,000

	5/24/2001	2/7/2003	6/12/2003	10/1/2003	11/29/2004	NJDEP Groundwater Quality Standards
MW-23	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Benzo(a)anthracene	NE	NE	0.70	NE	NE	0.1
Benzo(a)pyrene	NE	NE	0.60	NE	NE	0.1
Benzo(b)fluoranthene	NE	NE	0.40	NE	NE	0.2
Indeno(123-cd)pyrene	NE	NE	0.30	NE	NE	0.2
Arsenic	39	49	22	28	18	3
Iron	NE	NE	315	NE	NE	300
Lead	NE	NE	NE	NE	5.3	5
Manganese	303	290	503	230	272	50
Sodium	86,200	66,000	101,000	59,000	61,700	50,000
Total Dissolved Solids	NA	570,000	NA	NA	NA	500,000

	8/22/2005	NJDEP Groundwater Quality Standards
MW-48	UG/L	UG/L
Benzene	130	1
Methylene Chloride	7.5	3
Aluminum	220	200
Arsenic	2,310	3
Cadmium	7.7	4
Chromium	73	70
Lead	8.6	5
Thallium	12	2

	6/1/2006	NJDEP Groundwater Quality Standards
GZA-64	UG/L	UG/L
Benzo(a)anthracene	3.7	0.1
Benzo(a)pyrene	2.9	0.1
Benzo(b)fluoranthene	3.5	0.2
Benzo(k)fluoranthene	1.3	0.5
Indeno(123-cd)pyrene	2.0	0.2
Arsenic	97	3
Lead	93	5
Dissolved Arsenic	63	3
Dissolved Lead	38	5

	3/2/2005	NJDEP Groundwater Quality Standards
GZA-2	UG/L	UG/L
Benzene	2	1

	5/24/2001	2/7/2003	6/13/2003	10/2/2003	11/29/2004	NJDEP Groundwater Quality Standards
MW-21	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Aluminum	NE	6,200	NE	NE	NE	200
Arsenic	NE	28	3.8	NE	NE	3
Cadmium	NE	9.3	NE	NE	NE	4
Iron	13,500	21,000	3,170	6,700	11,200	300
Lead	NE	330	6.8	NE	8.0	5
Manganese	1,140	610	543	500	430	50
Nickel	NE	170	NE	NE	NE	100
Sodium	147,000	98,000	129,000	110,000	85,900	50,000
Beta-BHC	NE	NE	NE	0.093	NE	0.04
Total Dissolved Solids	NA	1,100,000	NA	NA	NA	500,000

	9/8/2006	NJDEP Groundwater Quality Standards
MW-53	UG/L	UG/L
Benzo(a)anthracene	0.8	0.1
Benzo(a)pyrene	0.5	0.1
Benzo(b)fluoranthene	0.4	0.2
Indeno(123-cd)pyrene	0.4	0.2
Antimony	51	6
Arsenic	2,130	3

	6/1/2006	NJDEP Groundwater Quality Standards
GZA-65	UG/L	UG/L
Benzo(a)anthracene	4.2	0.1
Benzo(a)pyrene	4.5	0.1
Benzo(b)fluoranthene	5.8	0.2
Benzo(k)fluoranthene	2.0	0.5
Indeno(123-cd)pyrene	3.7	0.2
Antimony	56	6
Arsenic	729	3
Chromium	80	70
Mercury	3.3	2
Lead	556	5
Dissolved Arsenic	336	2

	6/1/2006	NJDEP Groundwater Quality Standards
GZA-68	UG/L	UG/L
Antimony	471	6
Arsenic	1650	3
Lead	853	5
Mercury	5.6	2
Thallium	22	2
Dissolved Antimony	38	6
Dissolved Arsenic	1760	3

	9/8/2006	NJDEP Groundwater Quality Standards
MW-52	UG/L	UG/L
Benzene	1.3	1
Benzo(a)anthracene	2.0	0.1
Benzo(a)pyrene	0.9	0.1
Benzo(b)fluoranthene	0.7	0.2
Benzo(k)fluoranthene	0.8	0.5
Indeno(123-cd)pyrene	0.7	0.2
Naphthalene	390	300
Antimony	16	6
Arsenic	1,310	3
Lead	6.4	5

	6/1/2006	NJDEP Groundwater Quality Standards
GZA-66	UG/L	UG/L
Benzo(a)anthracene	1.1	0.1
Benzo(a)pyrene	1.0	0.2
Benzo(b)fluoranthene	1.0	0.2
Benzo(k)fluoranthene	0.60	0.5
Indeno(123-cd)pyrene	0.68	0.2
Antimony	116	6
Arsenic	491	3
Lead	1400	5
Dissolved Antimony	66	6
Dissolved Arsenic	336	2

	6/1/2006	NJDEP Groundwater Quality Standards
GZA-67	UG/L	UG/L
Antimony	409	6
Arsenic	808	3
Mercury	90	2
Lead	1,160	5
Thallium	7.0	2
Dissolved Arsenic	123	3

	9/8/2006	NJDEP Groundwater Quality Standards
MW-51	UG/L	UG/L
Benzo(a)anthracene	3.0	0.1
Benzo(a)pyrene	2	0.1
Benzo(b)fluoranthene	1.0	0.2
Benzo(k)fluoranthene	1.0	0.5
Indeno(123-cd)pyrene	1.0	0.2
Antimony	16	6
Arsenic	359	3
Lead	14	5

	6/12/2003	10/1/2003	12/2/2004	NJDEP Groundwater Quality Standards
MW-26	UG/L	UG/L	UG/L	UG/L
Benzene	NE	440	230	1
2,4-Dimethylphenol	NE	4,700	NE	100
Naphthalene	NE	6,200	3,800	300
Aluminum	NE	3,900	2,830	200
Antimony	NE	29	23	6
Arsenic	48	47	41	3
Iron	1,200	27,000	10,400	300
Lead	NE	49	50	5
Manganese	930	3,500	1,390	50
Sodium	219,000	1,400,000	775,000	50,000
Thallium	NE	NE	10	2

	3/8/2001	2/7/2003	6/12/2003	10/1/2003	12/1/2004	8/16/2006	NJDEP Groundwater Quality Standards
MW-4	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Benzene	5.4	NE	1.3	NE	NE	1.8	1
Benzo(a)anthracene	NE	NE	2.6	NE	NE	0.2	0.1
Benzo(a)pyrene	NE	NE	1.8	NE	NE	NE	0.1
Benzo(b)fluoranthene	NE	NE	1.0	NE	NE	NE	0.2
Benzo(k)fluoranthene	NE	NE	1.7	NE	NE	NE	0.5
Indeno(1,2,3-cd)-pyrene	NE	NE	0.8	NE	NE	NE	0.2
Aluminum	NE	490	1,010	NE	NE	NA	200
Antimony	7.4	12	18	15	18	NE	6
Arsenic	152	330	162	330	181	245	3
Cadmium	NE	6.2	NE	NE	NE	NE	4
Iron	959	11,000	7,010	1,500	1,160	NA	300
Lead	NE	19	17	NE	NE	NE	5
Manganese	501	430	436	420	227	NE	50
Sodium	406,000	180,000	615,000	610,000	NE	NA	50,000
Thallium	NE	NE	NE	NE	7.2	NE	50,000
Total PCBs	NE	NE	NE	NE	4.8	NE	0.5
Aldrin	NE	0.085	NE	NE	NE	NE	0.04
Alpha-BHC	NE	NE	NE	0.30	NE	0.18	0.02
Gamma-BHC	NE	NE	NE	0.10	NE	0.093	0.03

LEGEND:

- BUILDING FOOTPRINT
- APPROXIMATE SITE BOUNDARY
- B-1 LANGAN AUG-SEP-03 BORING LOCATION
- LB-23 LANGAN JAN-JUN-03 BORING LOCATION
- SB-1 LANGAN MAY-01 BORING LOCATION
- MW-5 MONITORING WELL LOCATION
- TP-5 TEST PIT LOCATION
- GZA-2 GZA BORING LOCATION
- TP-GZA-2 GZA TEST PIT LOCATION
- NC NO CRITERIA
- NA NOT ANALYZED
- NE NO EXCEEDENCE

NOTE:
ONLY PARAMETERS EXCEEDING THE LOWEST CRITERIA ARE SHOWN. REFER TO THE LABORATORY DATA REPORTS FOR COMPLETE ANALYTICAL RESULTS.

Prepared By:
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File Name: 161484015.dwg
Project Mgr: DW Reviewed By: MH
Designed By: Drawn By: MT
Revision No.: Rev. Date/Time Revised: Dec 13, 2006-1:48pm

I. PARK EDGEWATER
45 River Road
Edgewater, New Jersey

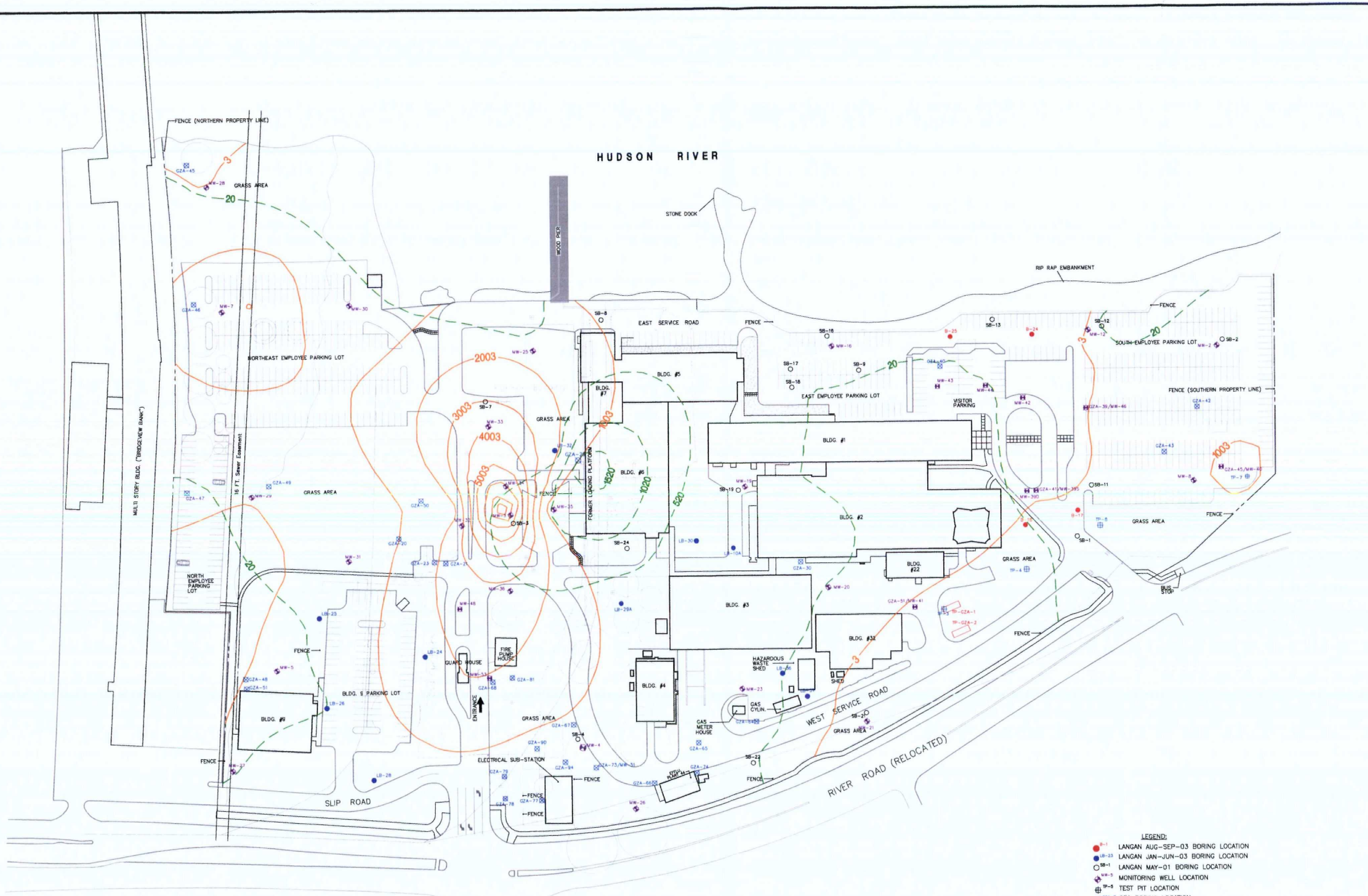
Groundwater Analytical Results

Remedial Investigation Report
New Police Station and Borough Hall

SCALE 0 80' 120'

Project No. 41.0161484.00

Figure No. Figure 6



NOTES:

1. ARSENIC SOIL STANDARD IS 20 PPM.
2. ARSENIC GROUNDWATER STANDARD IS 3 PPB.
3. NJDEP MAXIMUM HISTORIC FILL VALUE FOR ARSENIC IS 1,098 PPM.
4. ONLY BORING/WELL LOCATIONS USED TO GENERATE THE CONTOURS ARE SHOWN ON THIS PLAN.

IPARK EDGEWATER
45 River Road
Edgewater, New Jersey

Arsenic in Soil (>4') and Groundwater

New Police Station and Borough Hall Remedial Investigation Report

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Project Mgr: DW
Designed By: DW
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Drawn By: MT
File Name: 161484018.dwg
Revision No.: Rev.
Date/Time Revised: Dec 14, 2006-10:14am
Acknowledgment:

Project No. 41.0161484.00

Figure No. **Figure 7a**

LEGEND:

- B-1 LANGAN AUG-SEP-03 BORING LOCATION
- LB-23 LANGAN JAN-JUN-03 BORING LOCATION
- SB-1 LANGAN MAY-01 BORING LOCATION
- MW-5 MONITORING WELL LOCATION
- TP-5 TEST PIT LOCATION
- GZA-2 GZA BORING LOCATION
- TP-GZA-2 GZA TEST PIT LOCATION
- ARSENIC SOILS CONTOUR (CONTOUR INTERVAL 500 PPM)

NOTES:

1. ARSENIC SOIL STANDARD IS 20 PPM.
2. NJDEP MAXIMUM HISTORIC FILL VALUE FOR ARSENIC IS 1,098 PPM.
3. ONLY BORING LOCATIONS USED TO GENERATE THE CONTOURS ARE SHOWN ON THIS PLAN.

REV. NO.	DESCRIPTION	BY	DATE

Acknowledgment:

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Project Mgr: DW Reviewed By: DW
Designed By: DW Drawn By: MT
File Name: 161484018.dwg
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Date/Time Revised: Dec 14, 2006-10:15am

I.PARK EDGEWATER
45 River Road
Edgewater, New Jersey

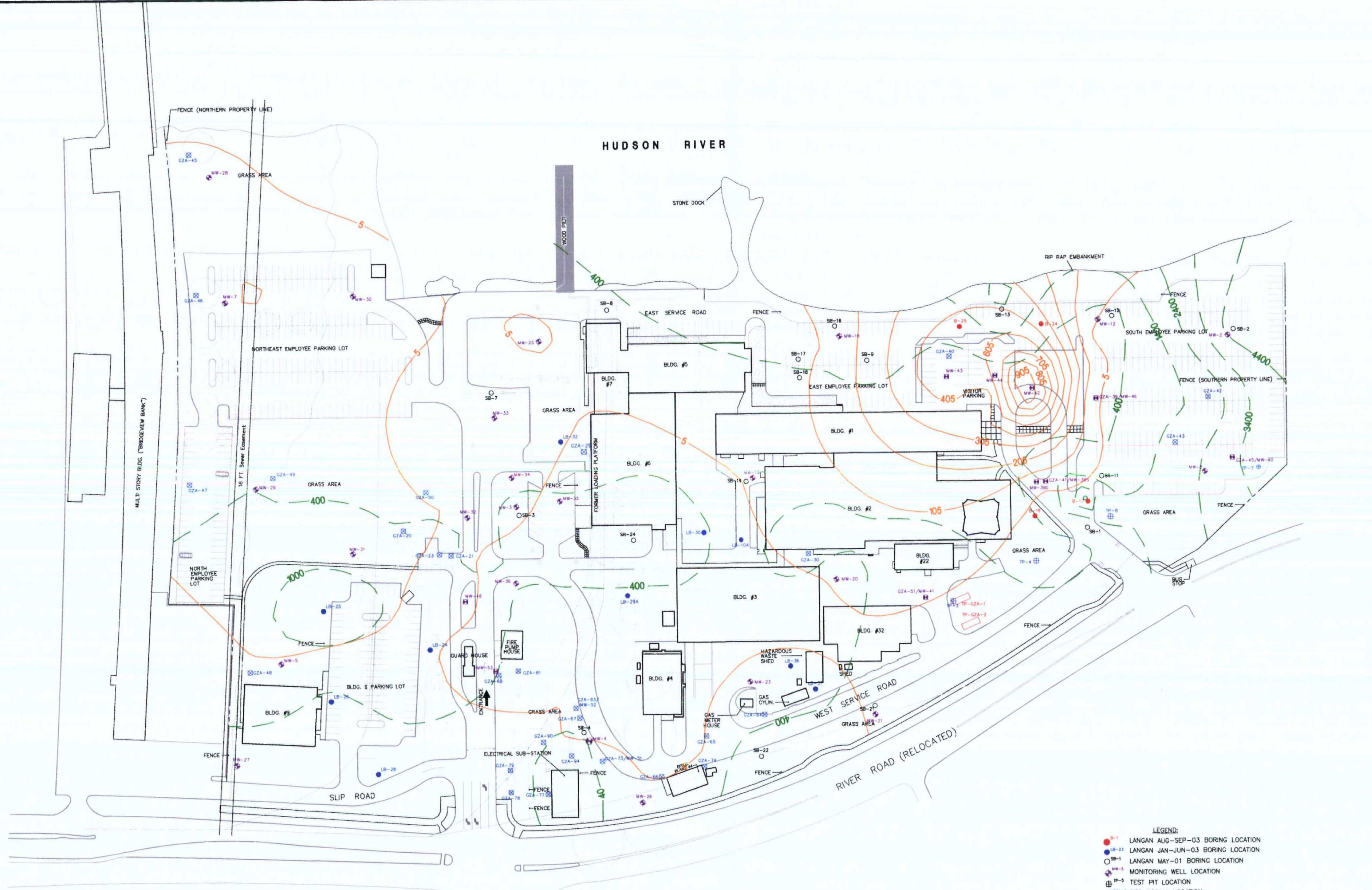
Arsenic in Soil (0-4')

New Police Station and Borough Hall
Remedial Investigation Report

SCALE
0 30' 60' 120'

Project No. 41.0161484.00

Figure No. **Figure 7b**



NOTES:

1. LEAD SOIL STANDARD IS 400 PPM.
2. LEAD GROUNDWATER STANDARD IS 5 PPB.
3. NJDEP MAXIMUM HISTORIC FILL VALUE FOR LEAD IS 10,700 PPM.
4. ONLY BORING/WELL LOCATIONS USED TO GENERATE THE CONTOURS ARE SHOWN ON THIS PLAN.

REV. NO.	DESCRIPTION	BY	DATE

Acknowledgment:

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Designed By: DW Drawn By: MT
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Date/Time Revised: Dec 14, 2006-10:43am

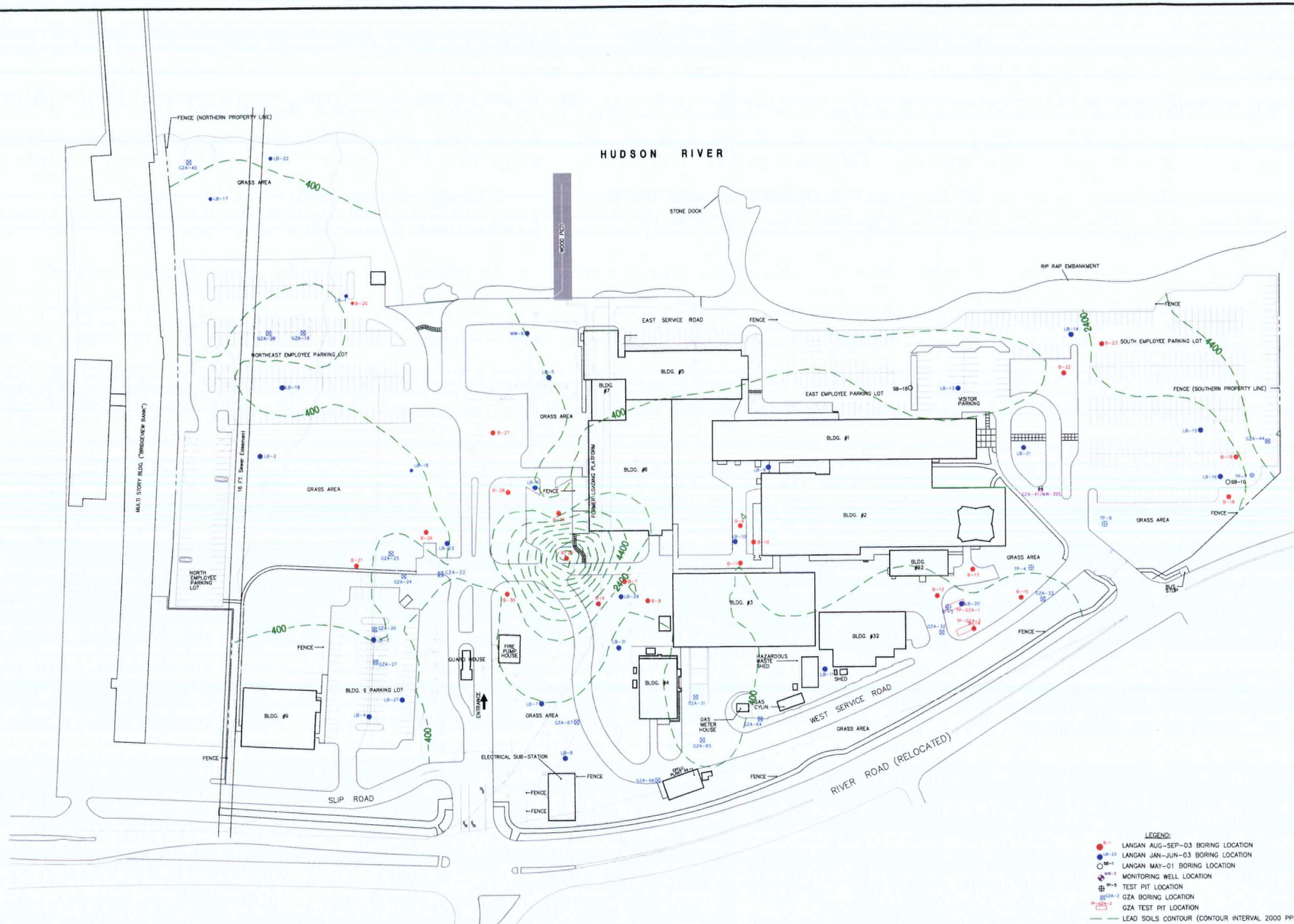
LPARK EDGEWATER
45 River Road
Edgewater, New Jersey

Lead in Soil (>4') and Groundwater

New Police Station and Borough Hall Remedial Investigation Report

Project No. **41.0161484.00**

Figure No. **Figure 7c**



NOTES:

1. LEAD SOIL STANDARD IS 400 PPM.

2. NJDEP MAXIMUM HISTORIC FILL VALUE FOR LEAD IS 10,700 PPM.

3. ONLY BORING LOCATIONS USED TO GENERATE THE CONTOURS ARE SHOWN ON THIS PLAN.

REV. NO.	DESCRIPTION	BY	DATE

Acknowledgment:

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Project Mgr: DW
Reviewed by: DW
Drawn By: MC
File Name: 161.484418.dwg
Revision No.: Rev.
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LPARK EDGEWATER
45 River Road
Edgewater, New Jersey

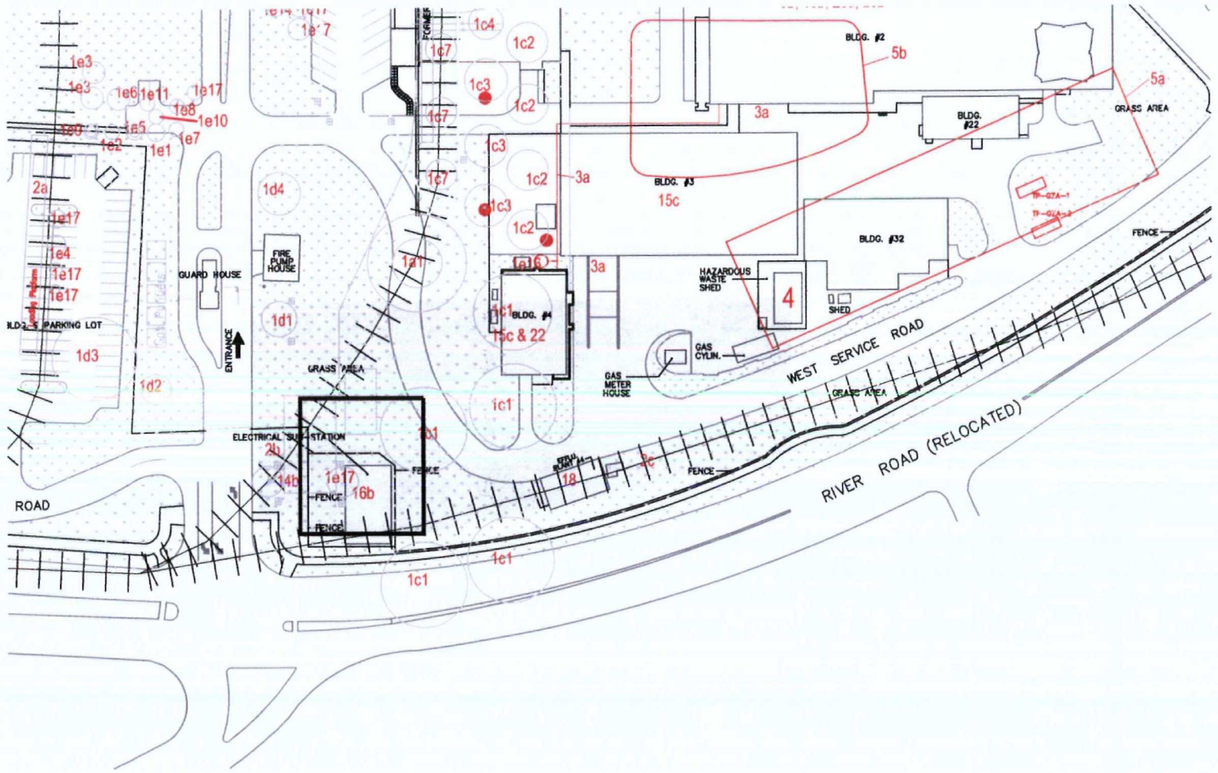
Lead in Soil (0-4')

New Police Station and Borough Hall
Remedial Investigation Report

SCALE
0 30' 60' 120'

Project No.
41.0161484.00

Figure No.
Figure 7d



POTENTIALLY CONTAMINATED AREAS OF CONCERN

AREA OF CONCERN (AOC)	AOC#	Description	NFA
AOC#1 Aboveground Storage Tanks and Associated Piping			
Diesel Fuel Oil Tanks	1b1	2 former 564 gallon diesel fuel oil tanks	X
	1b2	One 1,500 gallon diesel fuel tank	X
Former Chemical Storage Tanks/Bins	1e17	Uknown AST	
AOC#2 Loading and Unloading Areas	2c	Former railroad spurs (Block 99)	X
AOC#4 Storage Pads (including drum and/or waste storage)	4	Hazardous Waste Drum Storage Pad	
AOC#8 Floor Drains, Trenches, Piping and Sumps	8b	Trenches and Piping	
	8c	Sumps	
AOC#13 Drywells and Sumps	13	Expansion Pit Sumps/Drywells	
AOC#14 Waste Water Collection Systems (Septic, Seepage Pits, Dry Wells)	14b	Gas Plant Septic Tank	
AOC#15 Historic Fill	15c	Bldg. 3,4,5,6,8 (1982 Main Expansion)	
AOC#16 Electrical Transformers and Capacitors	16b	Current Transformer/Electrical Substation	
AOC#18 Waste Treatment Areas	18	pH Neutralization facility (Bldg .44)	
AOC#22 Boiler Rooms	22	Boiler House (Bldg.4)	X
AOC#24 Pitch/Asphaltic Material	24a	Pitch/Asphaltic Material (Block 100)	
	24b	Pitch/Asphaltic Material (Block 99 near Bldg.1)	
	24c	Pitch/Asphaltic Material (Block 99 near parking lot adjacent to Hudson River)	X
	24d	Pitch/Asphaltic Material (Block 100 at Visitor Parking Lot)	
	24e	Asphaltic Material (block 99 and 100)	
	24f	Asphaltic Material (block 99 and 100)	
	24g	Asphaltic Material (block 99 and 100)	
	24h	Asphaltic Material (block 99 and 100)	
	24i	Asphaltic Material (block 99 and 100)	
	24j	Asphaltic Material (block 99 and 100)	
	24k	Asphaltic Material (block 99 and 100)	
	24l	Asphaltic Material (block 99 and 100)	

LEGEND

APPROXIMATE SITE BOUNDARY

BUILDING FOOTPRINT

Prepared By:
GZA GeoEnvironmental of New York
Engineers and Scientists
(212) 594-8140 440 Ninth Avenue 18th Floor
(212) 279-8180 New York, New York 10001

File Name: 161484016.dwg
Project Mgr: DW Reviewed By: MH
Designed By: Drawn By: MT
Revision No.: Rev. Date/Time Revised: Dec 20, 2006–8:05am

I. PARK EDGEWATER
45 River Road
Edgewater, New Jersey

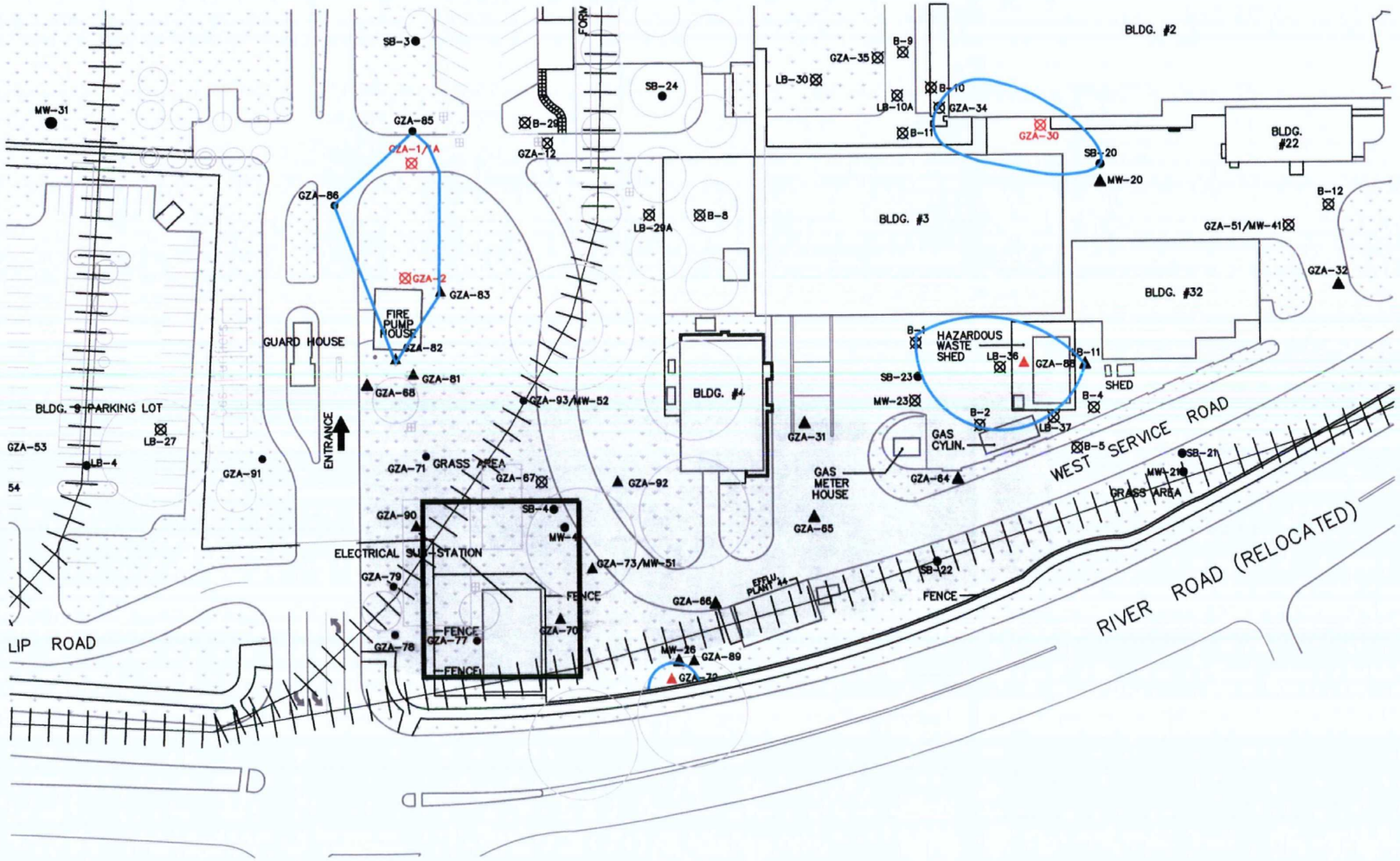
Site Plan with AOCs

New Police Station and Borough Hall
Remedial Investigation Report

SCALE 0 60' 120'

Project No. 41.0161484.00

Figure No. Figure 8



LEGEND

- P/A MATERIAL OBSERVED, NATIVE MATERIAL NOT ENCOUNTERED.
- P/A MATERIAL OBSERVED, NATIVE MATERIAL ENCOUNTERED.
- NO P/A MATERIAL OBSERVED, NATIVE MATERIAL ENCOUNTERED
- TAFFY-LIKE P/A MATERIAL OVSERVED IN SOIL BORING.
- TAFFY-LIKE P/A MATERIAL OBSERVED IN SOIL BORING.
- EXTENT OF TAFFY-LIKE PITCH/ASPHALTIC MATERIAL.

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File Name: 161484.00-Figure 9.dwg
Project Mgr: DW Reviewed By: MS
Designed By: MH Drawn By: MT
Revision No.: Rev. Date/Time Revised: Dec 14, 2006-3:07pm

I. PARK EDGEWATER
45 River Road
Edgewater, New Jersey

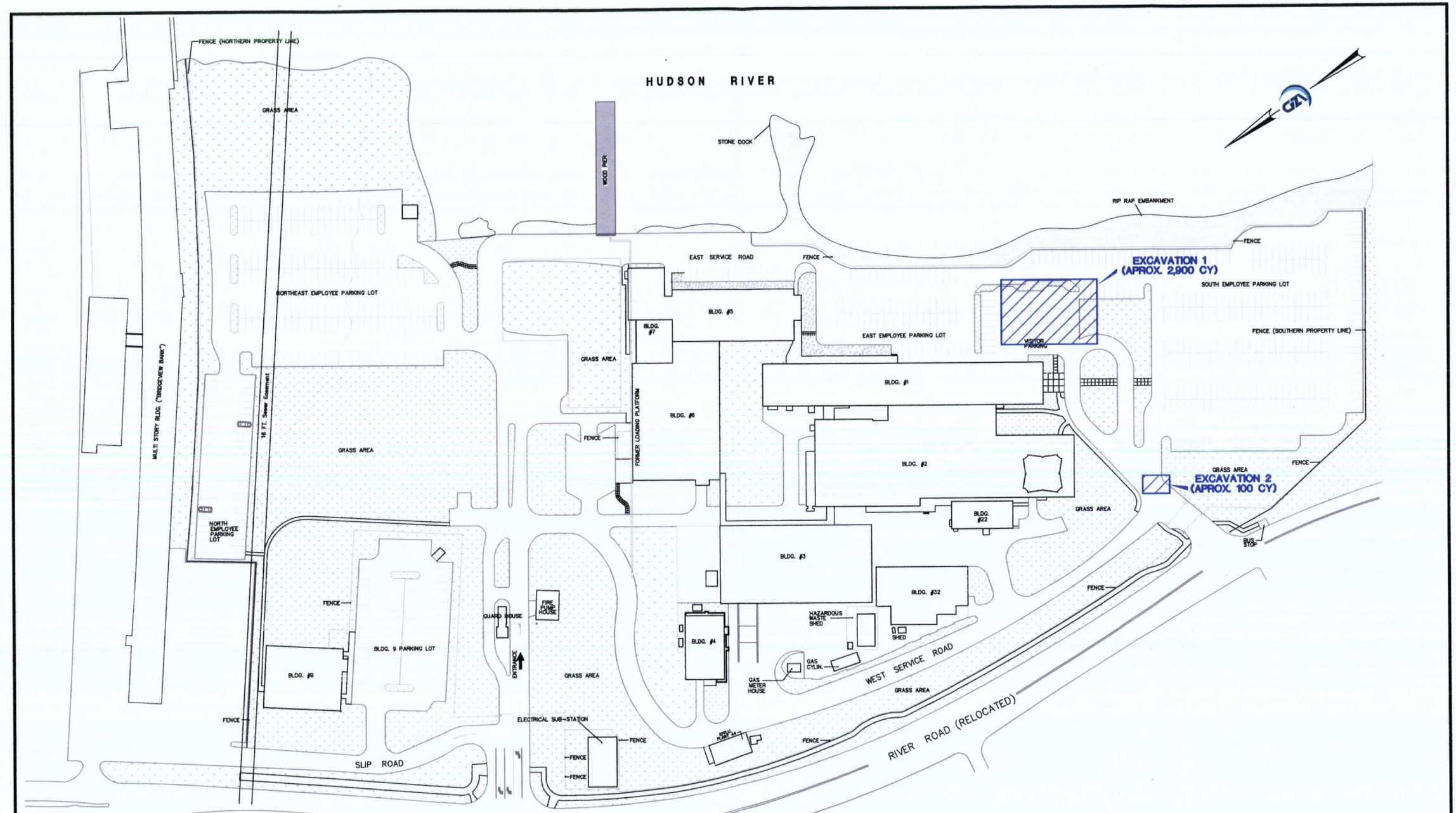
EXTENT OF P/A MATERIAL

Remedial Investigation Report
New Police Station and Borough Hall

SCALE 0 40' 80'

Project No. 41.0161484.00

Figure No. Figure 9



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File Name: 161484017.dwg
Project Mgr: DW Reviewed By: DW
Designed By: DW Drawn By: EM
Revision No.: Rev. Date/Time Revised: Dec 14, 2006-4:29pm

I. PARK EDGEWATER
45 River Road
Edgewater, New Jersey

Soil Reuse Areas

New Police Station and Borough Hall
Remedial Investigation Report

SCALE
0 60' 120'

Project No. 41.0161484.00

Figure No. Figure 10

APPENDIX A

LABORATORY DATA REPORTS

APPENDIX B

SITE-SPECIFIC HEALTH AND SAFETY PLAN

GZA SITE-SPECIFIC HEALTH, SAFETY & ACCIDENT PREVENTION PLAN

CLIENT/SITE/PROJECT INFORMATION

Client: Edgewater, LLC		
Site Address: Former Conopco, Inc./Unilever Research and Development Facility, 45 River Road, Edgewater, NJ 07020		
Site Description: Former soap and edible oil manufacturing plant located in Bergen County adjacent to the Hudson River.		
Job/Project #: 41.0161318.00 41.0161484.00	Estimated Start Date: 08/15/06	Estimated Finish Date: 08/25/06

EMERGENCY INFORMATION

Hospital Name & Address: Palisades Medical Center, 7600 River Road, North Bergen New Jersey		Hospital #: (201) 996-2000
Directions and Street Map of Route to Nearest Hospital Attached: ☒ Yes ☐ No (if no, do not proceed)		
Fire #: 911	Ambulance #: 911	Police #: 911
Other Emergency Contact: David Winslow		Phone #: 212-594-8140 (X3312) 347-242-7107 (cell)
Location of Nearest Phone: Cell phone on site (Meredith Hayes 347-242-7106)		

SUB-SURFACE WORK

Have Necessary Underground Utility Notifications For Subsurface Work Been Made?	☐ Yes ☒ Not Applicable
Specify Clearance Date & Time, Dig Safe Clearance I.D. #, And Other Relevant Information: Performed by Summit Drilling	

SCOPE OF WORK

Specific Tasks Performed by GZA:	Soil and groundwater sampling
Concurrent Tasks to be Performed by GZA Subcontractors (List Subcontractors by Name):	Hager-Richter will perform a geophysical survey. Summit Drilling Co., Inc. will complete 23 borings.
Concurrent Tasks to be Performed by Others:	None.

OVERVIEW OF H&S HAZARDS AND SAFETY MEASURES (also see Hazard Assessment)

Any CONFINED SPACE entry? ☐ **YES** ☒ **NO** If yes, explain:	**Any INDOOR fieldwork?** ☐ **YES** ☒ **NO** If yes, explain
Chemical Exposure Hazards and Safety Measures: Petroleum product and constituents (i.e., elevated VOCs). GZA field workers will be in appropriate PPE	
Physical Hazards and Associated Safety Measures: Inhalation of petroleum vapors, but will be sampling outdoors, so not likely to be hazardous condition.	
General H&S Comments: Site controlled by security.	

EQUIPMENT AND CONTROLS

Monitoring Equipment

- ☒ PID Type: OVM 580 B Lamp Energy: 10.6 eV
- ☐ FID Type:
- ☐ Cal gas and equipment type: isobutylene
- ☐ LEL/O_2 Meter
- ☐ Others:

Other Equipment & Gear

- ☐ 10# ABC Fire Extinguisher when gasoline powered equipment is present
- ☐ Caution Tape
- ☐ Traffic Cones or Stanchions
- ☐ Warning Signs or Placards
- ☒ Decon Buckets, Brushes, Detergent, Towels and Plastic Bags
- ☒ Others: MW Sampling Pump, Generator, Water-level Meter, Oil/water Meter, and Lamp.

Personal Protective Equipment

- ☐ Respirator Type:
- ☐ Resp-Cartridge Type:
- ☒ Hardhat
- ☐ Outer Gloves Type:
- ☒ Inner Gloves Type: Nitrile
- ☒ Steel-toed boots/shoes
- ☐ Coveralls Type:
- ☐ Outer Boots Type:
- ☒ Eye Protection with Side Shields
- ☒ Traffic Vest
- ☐ Personal Flotation Device (PFD)
- ☐ Others: Tyvek Suit

1. All direct reading instruments must be referenced on site at least twice/day (pre- and post-sampling) using a cal-gas reference standard and in accordance with the manufacturer's instructions. Monitoring using direct reading instruments should be continuous while there is disturbance of material (e.g. soil).

2. A 15- to 25-foot exclusion zone is required wherever necessary to control access to heavy equipment and/or hazardous exposure situations.

AIR MONITORING INSTRUMENTS AND ACTION LEVELS:

Organic Vapor Detector (H-Nu, OVM, OVA) - Breathing Zone Readings:

0 to 10 ppm	Remain in Level D.
10 to 25 ppm	Withdraw from work area and contact Project Management. Proceed to Level C protection for re-entry, or discontinue operation
> 25 ppm	Secure operations, withdraw from work area, and discontinue work at that location until contaminants can be evaluated, and detailed (SSHP) plan implemented.

Combustible Gas Indicator CGI/LEL Meter (if required) - Readings Near Vapor Source: None anticipated

• < 10% LEL:	Continue working, Continue to monitor. Eliminate all ignition sources.
• > 10% LEL:	Stop operations and withdraw from area. Continue working with vapor levels dissipate, or when appropriate control measures have abated the condition.

Other:

ROLES AND RESPONSIBILITIES:

GZA ON-SITE PERSONNEL

Name	Project Title/Assigned Role	Telephone Numbers
David Winslow	Site Supervisor	work: (212) 594-8140 cell: (347) 242-7107
Meredith Hayes	Site Safety Officer/Competent Person	work: (212) 594-8140 cell: (347) 242-7107
Meredith Hayes	First Aid Personnel	work: (212) 594-8140 cell: (347) 242-7106
Meredith Hayes	Site Inspector	work: (212) 594-8140 cell: (347) 242-7106

Site Supervisors and Project Managers (SS/PM): Responsibility for compliance with GZA Health and Safety programs, policies, procedures and applicable laws and regulations is shared by all GZA management and supervisory personnel. This includes the need for effective oversight and supervision of project staff necessary to control the Health and Safety aspects of GZA on-site activities.

Site Safety Officers and Competent Persons (SSO/CP): The Site Safety Officer (SSO) or "Competent Person", as defined by OSHA 1926.20(b) - Accident Prevention Responsibilities, is the individual "who is capable of identifying existing and predictable hazards in surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." The SSO is responsible for implementation of the HASP.

First Aid Personnel: In accordance with OSHA 1926.50, at least one individual designated by GZA who has current (Red Cross or equivalent) training and certification in basic first aid and cardiopulmonary resuscitation (CPR) must be present during on-site activities involving multiple GZA personnel.

Staff: Ultimate control of Health and Safety is in the hands of each individual employee. Therefore, each employee must become familiar with and comply with all Health and Safety requirements associated with their position and daily operations. Employees also have the responsibility to notify the appropriate management, SSO and HSC of unsafe conditions and accidents/injuries immediately.

(Sub)contractors: (Sub)contractors must develop their own accident prevention plan related to their specific on-site activities. Subcontractors may use GZA's plan as an informational model. However, each Subcontractor is responsible for determining the plan's adequacy and applicability to its own activities on site.

OTHER PROJECT PERSONNEL:

Name	Project Title/Assigned Role	Telephone Numbers
Douglas Roy	Associate/Principal-in-Charge	Work: (212) 594-8140 x:3301 Cell: (646) 533-5765
Dave Winslow	Project Manager	Work: (212) 594-8140 x:3312 Cell: (347) 242-7107
Stephen M. Kline	Health and Safety Coordinator (HSC)	Work: (212) 594-8140 x:3305 Cell: (347) 242-7109
Mark P. Malchik, CIH, CSP	GZA Director of Health and Safety	Work: (781) 278-5747 Home: (978) 287-0591

DOCUMENTATION TO BE COMPLETED ON SITE

- A **Site Inspection Log** (Attachment A) must be completed at the initiation of on-site activities and at least once per week thereafter until the completion of GZA on-site activities.
- A **Site Health and Safety Briefing/ Site Orientation Record** (Attachment B) must be completed at the initiation of on-site activities and at least once per week thereafter until the completion of GZA on-site activities. (Note: The actual briefing may be conducted off site, in the office for example, if conditions preclude or render impractical its completion on site.)
- The **Subcontractor's Statement of Understanding Regarding Health and Safety Responsibilities** (Attachment C)
- **GZA Incident Report and/or Discovery of a Potential Hazard** (Attachment D) to be completed on an as needed basis.

HAZARD ASSESSMENT

Enter either: **X** *(applies, or required item(s) available) or* **NA** *(not applicable)*

HAZARD ASSESSMENT: PHYSICAL HAZARDS AND RELATED CONCERNS

☐ **Confined Space Entry (CSE).** Confined space entry means the *potentially hazardous* entry into any space which, by design, has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include but are not limited to storage tanks, compartments of ships, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines. Other environments which must be treated as confined spaces include *test pits, and basements, garages, warehouses and other indoor areas where mechanical (i.e., diesel, propane, gasoline or similarly powered) equipment must be operated for drilling or test pitting purposes.* Confined space entry should be allowed only when absolutely necessary, and then only when all requirements of GZA's Confined Space Entry Control Program, (Policy 02-8200) and/or CSE Program Supplement for Indoor Drilling (and Similar Operations) and/or Trench and Excavation Safety and Health Guide (and CSE Program Supplement), contained in the Health and Safety Program Manual, have been satisfied. To be performed by others.

☒ **Construction Hazards, Drill Rigs, Backhoes, etc.** The use of drill rigs, backhoes and other heavy equipment represent potentially serious construction hazards. Whenever such equipment is used, personnel in the vicinity should be limited to those who must be there to complete their assigned duties. All personnel must avoid standing within the turning radius of the equipment or below any suspended load. Job sites must be kept as clean, orderly and sanitary as possible. When water is used, care must be taken to avoid creating muddy or slippery conditions. If slippery conditions are unavoidable, barriers and warning signs must be used to warn of these dangers.

Never turn your back to operating machinery. Never wear loose clothing, jewelry, hair or other personal items around rotating equipment or other equipment that could may catch or ensnare loose clothing, jewelry, hair or other personal items. Always stand far enough away from operating machinery to prevent accident contact which may result from mechanical or human error.

Additionally, the following basic personal protective measures must be observed: **Hardhats** must be worn to protect against bumps or falling objects. **Safety glasses** must be worn by all workers in the vicinity of drill rigs or other sources of flying objects. Goggles, face shields or other forms of eye protection must be worn when necessary to protect against chemicals or other hazards. **Steel-toed safety shoes or boots** are also required. The shoes must be chemically resistant or protected with appropriately selected boots/coverings where necessary. Unless otherwise specified, normal **work clothes** must be worn. Long sleeves and gloves are also required whenever necessary to protect against hazardous contact, cuts, abrasions or other possible skin hazards.

☐ **Electrical.** OSHA regulations require that employees who may be exposed to electrical equipment be trained to recognize the associated hazards and the appropriate control methods. All **extension cords** used for portable tools or other equipment must be designed for hard or extra usage and be (three-wire) grounded. All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, and other locations where moisture/water contact may occur, must be equipped with **ground-fault circuit interrupters (GFCI)** units. GFCI units must be attached directly to or as close as possible to the receptacle. GFCI located away from the receptacle will not protect any wiring between the receptacle and the GFCI unit. Only the wiring plugged into the GFCI and outward will be protected by the GFCI. All **(temporary lighting)** lamps for general illumination must be protected from accidental breakage. Metal case sockets must be grounded. Portable lighting in wet or conductive locations should be 12 volts or less.

☐ **Drums and Buried Drums.** As a precautionary measure, personnel must assume that *labeled* and *unlabeled drums* encountered during field activities contain hazardous materials until their contents can be confirmed and characterized. Personnel should recognize that drums are frequently mislabeled, particularly drums that are reused.

Only trained and authorized personnel should be allowed to perform drum handling. Prior to any handling, drums must be visually inspected to gain as much information as possible about their contents. Trained field personnel must look for signs of deterioration such as corrosion, rust or leaks, and for signs that the drum is under pressure such as swelling or bulging. Drum-type and drumhead configuration may provide the observer with information about the type of material inside, (i.e., a removable lid is designed to contain solids, while the presence of a bung indicates liquid storage).

Although not usually anticipated, buried drums can be encountered when digging test pits. Therefore, the following provisions must be observed if drums are encountered. Machine excavation (i.e., backhoe) should cease immediately anytime a drum is encountered. The appropriate management personnel should be notified immediately. All GZA personnel should be instructed to immediately leave the work area.

Even authorized personnel must not enter an excavation where drums have been uncovered, even for monitoring purposes, unless all provisions of OSHA's trenching and excavation standard have been met and the appropriate level of personal protective equipment (PPE) is utilized. Sampling of unknown drums usually requires Level B protection. Buried drums must not be moved unless it can be accomplished in a safe manner and overpack drums are available.

☒ **Fire and Explosion.** The possibility of flammable materials being encountered during field activities must be recognized and the appropriate steps necessary to minimize fire and explosion must be observed. This includes situations where *organic vapors, free product or methane* are, or may be, encountered. When this occurs, monitoring with a combustible gas indicator (CGI), is required.

In situations where hexane, methanol are needed for field activities, the following precautions must be observed: keep flammable and combustible materials away from heat, sparks and open flames; do not smoke around flammable or combustible materials; provide an ABC rated fire extinguisher appropriate for the materials present, and keep all flammable and combustible liquids in approved and properly labeled safety containers.

☐ **Landfill/Methane Hazards**. Fire and explosion should be regarded as one of, if not the, most significant potential hazards associated with drilling operations and other intrusive work conducted at a landfill. Accordingly, all sources of ignition must be fully controlled. Failure to control ignition sources could result in fire, explosion and pose a serious threat to life and health. Control methods may include forced ventilation and/or filling the borehole with enough water to inhibit the release of methane and other gases which would otherwise escape through the top of the borehole.

If forced (mechanical) ventilation is to be used, all such equipment must be approved for Class I, Division I hazardous atmospheres. The blower must be positioned to blow across the top of the borehole so that gases and vapors may be diluted as they exit the borehole. Do not attempt to suck out the gases or vapors. Blowers, all other mechanical equipment, and tools which could release sparks or static electricity must be bonded and grounded.

Regardless of the gas/vapor control method used, the atmosphere surrounding the borehole must be frequently monitored using direct reading instruments approved for Class I, Division I hazardous atmospheres. Monitoring should be conducted within 1 to 2 feet of the top of the borehole. Do not insert sampling devices into the borehole. The use of tubing connected to a remote instrument is recommended. Never approach the auger or drill shaft while it is in operation. Always notify the operator when about to take a reading.

Regardless of actual instrument readings, if all sources of ignition can not be controlled, operations should be immediately shut down if readings equal or exceed 10% of LEL and the area evacuated until ignition sources have been eliminated. Ignition sources include, but are not limited to: smoking, static electricity, lighting, open flames, spontaneously ignitable substances, frictional heat or sparks, hot surfaces, radiant heat, electrical sparks, stray currents, cutting and welding, and ovens, furnaces and heating equipment.

☒ **Heat and Cold Stress**. Overexposure to temperature extremes can represent significant risks to personnel if simple precautions are not observed. Typical control measures designed to prevent **heat stress** include dressing properly, drinking plenty of the right fluids, and establishing an appropriate work/break regimen. Typical control measures designed to prevent **cold stress** also include dressing properly, and establishing an appropriate work/break regimen. The project manager must assure that the appropriate provisions of **GZA's Heat and Cold Stress Control Program** contained in the Health and Safety Program Manual are observed.

☒ **Moving Vehicles, Traffic Safety**. All vehicular traffic routes which could impact worker safety must be identified and communicated. Whenever necessary, barriers or other methods must be established to prevent injury from moving vehicles. Traffic vests must be worn by personnel working near moving vehicular traffic. This is particularly important when field activities are conducted in parking lots, driveways, ramps or roadways. OSHA 1926.201 specifies that when signs, signals or barricades do not provide adequate protection from highway or street traffic, flagmen must be utilized. *Flagmen must wear red or orange garments. Garments worn at night must be reflective.*

☒ **Noise**. Noise exposure can be affected by many factors including the number and types of noise sources (continuous vs. intermittent or impact), and the proximity to noise intensifying structures such as walls or buildings which cause noise to bounce back or echo. The single most important factor effecting total noise exposure is distance from the source. The closer one is to the source the louder the noise. The operation of a drill rig, backhoe or other mechanical equipment can be sources of significant noise exposure. In order to reduce the exposure to this noise, personnel working in areas of excessive noise must use hearing protectors (ear plugs or ear muffs) in accordance with the **GZA Hearing Conservation Program** contained in the Health and Safety Program Manual.

Rule-of-Thumb: Wherever actual data from sound level meters or noise dosimeters is unavailable and it is necessary to raise one's voice above a normal conversational level to communicate with others within 3 to 5 feet away, hearing protection should be worn.

☐ **Overhead Utilities and Hazards**. Overhead hazards can include low hanging structures which can cause injury due to bumping into them. Other overhead hazards include *falling objects, suspended loads, swinging loads and rotating equipment.* Hardhats must be worn by personnel in areas were these types of physical hazards may be encountered. Barriers or other methods must also be used to exclude personnel from these areas were appropriate. Electrical wires are another significant overhead hazard. According to OSHA (29 CFR 1926.550), *the minimum clearance which must be maintained from overhead electrical wires is 10 feet* from an electrical source rated $\leq$ 50 kV. Sources rated > 50 kV require a minimum clearance of 10 feet plus 0.4 inch per kV above 50 kV.

☐ **Pedestrian Traffic**. The uncontrolled presence of pedestrians on a drilling or excavation site can be hazardous to both pedestrians and site workers. Prior to the initiation of site activities, the site should be surveyed to determine if, when and where pedestrian may gain access. This includes walkways, parking lots, gates and doorways. Barriers or caution tape should be used to exclude all pedestrian traffic. *Exclusion of pedestrian traffic is intended to prevent injury to the pedestrians and eliminate distractions which could cause injury to GZA personnel or other site workers.*

☐ **Test Pit and/or other Excavations**. All provisions of the OSHA trenching and excavation standard (29 CFR 1926.650-652) and **GZA's Trench and Excavation Safety and Health Guide (and CSE Program Supplement)** contained in the Health and Safety Manual must be followed during excavation activities. This includes *all test pit excavation and sampling activities.* The estimated location of utility installations, such as

sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation.

Excavations in contaminated or potentially contaminated areas must be tested for confined spaces atmospheric hazards prior to entry. Excavations should not be entered if other means are available to perform the task requiring entry. If entry into an excavation is required, the atmosphere within the space must be monitored by a trained person to assure that oxygen concentrations are at greater than or equal to 19.5 percent, that combustible gas levels are less than 10 percent, and that vapor levels are within applicable safe exposure (PEL and TLV) limits.

A ladder or similar means of egress must be located in excavations greater than 4 feet in depth so as to require no more than 25 feet of lateral travel for employees. *No person should be allowed to enter an excavation in type B or C soil greater than 5 feet in depth unless the walls of the excavation have been protected using an approved shield (trench box), an approved shoring system, or the walls have been sloped back to an angle of 34 degrees, the excavation is free of accumulated water, and the excavation has been tested for hazardous atmospheres* as noted previously. If personnel enter an excavation, the spoils pile and all materials must be placed at least 2 feet from the edge of the excavation to prevent the materials from rolling into the excavation. *Personnel must remain at least 2 feet away from the edge of the excavation at all times.* Upon completion of a test pit exploration, the excavation should be backfilled and graded. Excavation should never be left open unless absolutely necessary, and then only with proper barricading and controls to prevent accidental injury.

☒ **Underground Utilities and Hazards**. The identification of underground storage tanks (USTs), pipes, utilities and other underground hazards is critically important prior to all drilling, excavating and other intrusive activities. In accordance with OSHA 29 CFR 1926.650, *the estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered* during excavation work, *must be determined* prior to opening an excavation. The same requirements apply to drilling operations and the use of soil-gas probes. Where public utilities may exist, the utility agencies or operators must be contacted directly or through a utility-sponsored service such as *Dig-Safe*. Where other underground hazards may exist, reasonable attempts must be made to identify their locations as well. *Failure to identify underground hazards can lead to fire, explosion, flooding, electrocution or other life threatening accidents.*

☐ **Water Hazards and Boat Sampling**. The collection of water or sediment samples on or immediately adjacent to a body of water can pose significant hazards. In addition to the slip, trip and fall hazards associated with wet surfaces, the potential for drowning accidents must be recognized. These hazards can be intensified by the use of some personnel protective equipment (PPE), particularly if respiratory protection is worn. OSHA 29 CFR 1926.106 requires that all employees working over or near water, where the danger of drowning exists, *must wear a U.S. Coast Guard-approved life jacket or buoyant work vest.* Ring buoys and emergency *standby personnel* must also be in place.

HAZARD ASSESSMENT: CHEMICAL HAZARDS AND RELATED CONCERNS

☒ **Chemicals Subject to OSHA Hazard Communication**. All chemicals used in field activities such as solvents, reagents, decontamination solutions, or any other hazardous chemical must be listed and accompanied by the required labels, Material Safety Data Sheets (MSDS), and employee training documentation (OSHA 1910.1200). For additional information refer to **GZA's Hazard Communication Program** contained in the Health and Safety Program manual.

☐ **Asbestos**. Disturbance of building materials in buildings built prior to 1980 must be evaluated for the presence of asbestos-containing materials by an accredited GZA inspector. The inspection and/or removal of asbestos-based or asbestos-containing building materials is regulated by some major cities and several states. Regulations require individuals who conduct building inspections for the presence of asbestos or collect samples of asbestos containing materials to be licensed or certified. GZA employees must determine the applicability of these regulations prior to any activities involving asbestos. The primary health effects of asbestos exposure include asbestosis (a scarring of the lungs), lung cancer, mesothelioma and other forms of cancer. Exposure to asbestos is regulated by a comprehensive OSHA standard (29 CFR 1910.1001).

☒ **BTEX Compounds**. Exposure to the vapors of **benzene, ethyl benzene, toluene** and **xylenes** above their respective permissible exposure limits (PELs), as defined by the Occupational Safety and Health Administration (OSHA), may produce irritation of the mucous membranes of the upper respiratory tract, nose and mouth. Overexposure may also result in the depression of the central nervous system. Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behavior. Benzene has been determined to be carcinogenic, targeting blood-forming organs and bone marrow. The odor threshold for benzene is higher than the PEL and employees may be overexposed to benzene without sensing its presence, therefore, detector tubes must be utilized to evaluate airborne concentrations.

The vapor pressures of these compounds are high enough to generate significant quantities of airborne vapor. On sites where high concentrations of these compounds are present, a potential inhalation hazard to the field team during subsurface investigations can result. However, if the site is open and the anticipated quantities of BTEX contamination are small (i.e., part per million concentrations in the soil or groundwater), overexposure potential will also be small.

☐ **Carbon Monoxide**. Carbon monoxide (CO) is a gas usually formed by the incomplete combustion of various fuels. Welding, cutting and the operation internal combustion engines can produce significant quantities of CO. Amounts of CO can quickly rise to hazardous levels in poorly ventilated areas. CO is odorless and colorless. It cannot be detected without appropriate monitoring equipment. LEL/O_2 meters and H-Nu/photoionizing detectors are not appropriate for the detection of CO. A direct reading instrument, calibrated for CO, should be used. Common symptoms of overexposure include pounding of the heart, a dull headache, flashes before the eyes, dizziness, ringing in the ears and nausea. These symptoms must not be relied upon in place of an appropriately calibrated monitoring instrument. Exposures should not exceed 15 ppm. Exposures above 15 ppm require the use of supplied air respirators. Air purifying respirators are not approved for protection against CO.

☐ **Chlorinated Organic Compounds.** Exposure to the vapors of many chlorinated organic compounds such as vinyl chloride, tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene and 1,2-dichloroethylene above their respective permissible exposure limits (PELs) will result in similar symptoms. The actual PELs as set by the Occupational Safety and Health Administration (OSHA) vary depending on the specific compound. Overexposure to the vapor of these compounds can cause irritation of the eyes, nose and throat. The liquid if splashed in the eyes, may cause burning irritation and damage. Repeated or prolonged skin contact with the liquid may cause dermatitis. Acute overexposure to chlorinated hydrocarbons depresses the central nervous system exhibiting such symptoms as drowsiness, dizziness, headache, blurred vision, uncoordination, mental confusion, flushed skin, tremors, nausea, vomiting, fatigue and cardiac arrhythmia. Alcohol may make symptoms of overexposure worse. If alcohol has been consumed, the overexposed worker may become flushed. Some of these compounds are considered to be potential human carcinogens. Exposure to *vinyl chloride* is regulated by a comprehensive OSHA standard (29 CFR 1910.1017).

☐ **Chromium Compounds.** Hexavalent chromium compounds, upon contact with the skin can cause ulceration and possibly an allergic reaction. Inhalation of hexavalent chromium dusts is irritating and corrosive to the mucous membranes of the upper respiratory tract. Chrome ulcers and chrome dermatitis are common occupational health effects from prolonged and repeated exposure to hexavalent chromium compounds. Acute exposures to hexavalent chromium dusts may cause coughing or wheezing, pain on deep inspiration, tearing, inflammation of the conjunctiva, nasal itch and soreness or ulceration of the nasal septum. Certain forms of hexavalent chromium have been found to cause increased respiratory cancer among workers.

Trivalent chromium compounds (chromic oxide) are generally considered to be of lower toxicity, although dermatitis may occur as a result of direct handling.

☒ **Fuel Oil.** See Petroleum Hydrocarbons (PHC)

☐ **Gasoline.** See BTEX Compounds, and Tetraethyl and Tetramethyl Lead.

☐ **Herbicides.** Some of the commonly used herbicides present a low toxicity to man. However, other herbicides pose more serious problems. Organophosphorus and carbamate herbicides, if inhaled or ingested can interfere with the functioning of the central nervous system. Many herbicides can be readily absorbed through the skin to cause systemic effects. In addition to being absorbed through the skin, many herbicides, upon contact with the skin, may cause discoloring, skin irritation or dermatitis. Contaminants of commercial preparations of chlorinated phenoxy herbicides such as 2,4,5-T include 2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin). Dioxin is a known mutagen and a suspect carcinogen.

☐ **Hydrogen Sulfide (H_2S).** Hydrogen sulfide, characterized by its "rotten egg" odor, is produced by the decomposition of sulfur-containing organic matter. It is found in many of the same areas where methane is found such as landfills, swamps, sewers and sewer treatment facilities. An important characteristic of H_2S is its ability to cause a decrease in ones ability to detect its presence by smell. So although one may no longer be able to smell it, it could still be present in harmful concentrations.

The symptoms of over exposure include headache, dizziness, staggering and nausea. Severe over exposure can cause respiratory failure, coma, and death. The current OSHA PEL is 10 ppm as an 8-hour TWA. The ACGIH TLV is the same.

☐ **Lead Paint.** The inspection and/or removal, sanding, grinding, etc. of lead-based or lead-containing paints is now strictly regulated by OSHA. States may require individuals who conduct lead paint inspections or collect samples of lead paint to be licensed or certified. GZA employees must determine the applicability of these regulations prior to any activities involving lead paint. For additional health information, see Metal Compounds.

☒ **Metal Compounds.** Overexposure to metal compounds has been associated with a variety of local and systemic health hazards, both acute and chronic in nature, with chronic effects being most significant. Direct contact with the dusts of some metal compounds can result in contact or allergic dermatitis. Repeated contact with arsenic compounds may result in hyperpigmentation. Cases of skin cancer due to the trivalent inorganic arsenic compounds have been documented. The moist mucous membranes, particularly the conjunctivae, are most sensitive to the irritating effects of arsenic. Copper particles embedded in the eye result in a pronounced foreign body reaction with a characteristic discoloration of eye tissue.

Inhalation of copper and zinc dusts and fumes above their established PELs may result in flu-like symptoms known as "metal fume fever." Prolonged and repeated inhalation of the dusts of inorganic arsenic compounds above the established PEL may result in weakness, loss of appetite, a sense of heaviness in the stomach and vomiting. Respiratory problems such as cough, hoarseness and chest pain usually precede the gastrointestinal problems. Chronic overexposure to the dusts of inorganic arsenic may result in lung cancer.

The early symptoms of lead poisoning are usually nonspecific. Symptoms include sleep disturbances, decreased physical fitness, headache, decreased appetite and abdominal pains. Chronic overexposure may result in severe colic and severe abdominal cramping. The central nervous system (CNS) may also be adversely effected when lead is either inhaled or ingested in large quantities for extended periods of time. The peripheral nerve is usually affected. "Wrist drop" is peculiar to such CNS damage. Lead has also been characterized as a male and female reproductive toxin as well as a fetotoxin. Exposure to lead (Pb) is regulated by a comprehensive OSHA standard (29 CFR 1910.1025).

☐ **Methane.** Methane is an odorless, colorless, tasteless, gas that cannot be detected by an H-Nu or similar photoionizing detector (PID). When present in high concentrations in air, methane acts primarily as a simple asphyxiant without other significant physiologic effects. Simple asphyxiants dilute or displace oxygen below that required to maintain blood levels sufficient for normal tissue respiration.

Methane has a lower explosive limit (LEL) of 5 percent and an upper explosive limit (UEL) of 15 percent. The LEL of a substance is the minimum concentration of gas or vapor in air below which the substance will not burn when exposed to a source of ignition. This concentration is

expressed in percent by volume. Below this concentration, the mixture is "too-lean" to burn or explode. The UEL of a substance is the maximum concentration of gas or vapor in air above which the substance will not burn when exposed to a source of ignition. Above this concentration, the mixture is "too rich" to burn or explode. The explosive range is the range of concentrations between the LEL and UEL where the gas-air mixture will support combustion. For methane this range is 5 to 15 percent.

☐ **Pesticides**. Pesticides can be grouped into three major categories: organophosphates, carbamate and chlorinated hydrocarbons. The actual permissible exposure limits (PELs) as set by the Occupational Safety and Health Administration (OSHA), vary depending on the specific compound. Organophosphates, including Diazinon, Malathion and Parathion, are quickly absorbed into the body by inhalation, ingestion and direct skin contact. The symptoms of exposure include headache, fatigue, dizziness, blurred vision, sweating, cramps, nausea and vomiting. More severe symptoms can include tightness of the chest, muscle spasms, seizures and unconsciousness. It should also be noted that the Malathion and Parathion PELs both carry the *Skin* notation, indicating that these compounds adversely effect or penetrate the skin. OSHA specifies that skin exposure to substances carrying this designation be prevent or reduced through the use of the appropriate personal protective equipment (PPE).

Chlorinated Hydrocarbons such as Chlordane, DDT and Heptachlor can cause dizziness, nausea, abdominal pain and vomiting. The more severe symptoms include epileptic like seizures, rapid heart beat, coma and death. These compounds also carry the OSHA *Skin* notation. The symptoms of exposure to carbamate such Carbaryl (also known as Sevin) are similar to those described for the organophosphates. However, the OSHA exposure limit for Carbaryl *does not* carry the Skin notation.

☒ **Petroleum Hydrocarbons (PHCs)**. Petroleum Hydrocarbons such as fuel oil are generally considered to be of low toxicity. Recommended airborne exposure limits have not been established for these vapors. However, inhalation of low concentrations of the vapor may cause mucous membrane irritation. Inhalation of high concentrations of the vapor may cause pulmonary edema. Repeated or prolonged direct skin contact with the oil may produce skin irritation as a result of defatting. Protective measures, such as the wearing of chemically resistant gloves, to minimize contact are addressed elsewhere in this plan. Because of the relatively low vapor pressures associated with PHCs, an inhalation hazard in the outdoor environment is not likely.

☒ **Polychlorinated Biphenyls (PCBs)**. Prolonged skin contact with PCBs may cause the formation of comedones, sebaceous cysts, and/or pustules (a condition known as chloracne). PCBs are considered to be suspect carcinogens and may also cause reproductive damage.

The OSHA permissible exposure limits (PELs) for PCBs are as follows:

Compound	*PEL (8-hour time-weighted average)*
Chlorodiphenyl (42% Chlorine)	1 mg/m^3-Skin
Chlorodiphenyl (54% Chlorine)	0.5 mg/m^3 -Skin

It should be noted that PCBs have extremely low vapor pressures (0.001 mm Hg @ 42% Chlorine and 0.00006 mm Hg @ 54% Chlorine). This makes it unlikely that any significant vapor concentration (i.e., exposures above the OSHA PEL) will be created in the ambient environment. This minimizes the potential for any health hazards to arise due to inhalation unless the source is heated or generates an airborne mist. If generated, vapor or mists above the PEL may cause irritation of the eyes, nose, and throat. The exposure limits noted above are considered low enough to prevent systemic effects but it is not known if these levels will prevent local effects. It should also be noted that both PELs carry the *Skin* notation, indicating that these compounds adversely effect or penetrate the skin. OSHA specifies that skin exposure to substances carrying this designation be prevented or reduced through the use of the appropriate personal protective equipment (PPE).

☒ **Polycyclic Aromatic Hydrocarbons (PAHs)**. Due to the relatively low vapor pressure of PAH compounds, vapor hazards at ambient temperatures are not expected to occur. However, if site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore dust levels should be controlled with wetting if necessary. Repeated contact with certain PAH compounds has been associated with the development of skin cancer. Contact of PAH compounds with the skin may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultraviolet radiation. Protective measures, such as the wearing of chemically resistant gloves, are appropriate when handling PAH contaminated materials.

☐ **Tetraethyl and Tetramethyl Lead**. Both compounds are used as anti-knock ingredients in gasoline. The inhalation of tetraethyl lead dusts may result in irritation of the respiratory tract. This dust, when in contact with moist skin or eye membranes, may cause itching, burning and transient redness.

The direct absorption of a sufficient quantity of tetraethyl lead, whether briefly at a high rate, or for prolonged periods at a low rate, may cause acute intoxication of the central nervous system. Mild degrees of intoxication may cause headache, anxiety, insomnia, nervous excitation and minor gastrointestinal disturbances.

☒ **Volatile Organic Compounds (VOCs)**. See BTEX compounds and Chlorinated Organic Compounds.

☒ **Waste Oil**. See Petroleum Hydrocarbons (PHCs) and Cutting Oil.

HAZARD ASSESSMENT: BIOLOGICAL HAZARDS AND RELATED CONCERNS

☒ **Insects**. Insects represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact should be considered prior to all field activities. Disease or harmful effects can be transmitted through bites, stings or through direct contact with insects or through ingestion of foods contaminated by certain insects. Examples of disease transmitted by insect bites include encephalitis and

malaria from contaminated mosquitoes, Lyme disease and spotted fever from contaminated ticks. Stinging insects, such as bees and wasps, are prevalent throughout the country, particularly during the warmer months. The stings of these insects can be painful, and cause serious allergic reactions to some individuals.

☐ **Lyme Disease.** Lyme disease is an infection caused by the bite of certain ticks, primarily deer, dog and wood ticks. The symptoms of Lyme disease usually start out as a skin rash then progress to more serious symptoms. The more serious symptoms can include lesions, headaches, arthritis and permanent damage to the neurological system. If detected early the disease can be treated successfully with antibiotics. The following steps are recommended for prevention of Lyme disease and other diseases transmitted by ticks: a) Beware of tall grass, bushes, woods and other areas where ticks may live; b) *Wear good shoes, long pants tucked into socks, a shirt with a snug collar, good cuffs around the wrists and tails tucked into the pants. Insect/tick repellents may also be useful*; c) *Carefully monitor for the presence of ticks. Carefully inspect clothes and skin when undressing. If a tick is attached to the skin it should be removed with fine tipped tweezers. You should be alert for early symptoms over the next month or so. If you suspect that you have been bitten by a tick you should contact a physician for medical advice.*

☐ **Medical Wastes and Bloodborne Diseases.** Any field activity where exposure to medical wastes or other sources of bloodborne pathogens, including first aid, can be reasonably anticipated must be conducted in accordance with the OSHA (29 CFR 1910.1030) *Bloodborne Pathogens* standard. According to the OSHA definition, Bloodborne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to *hepatitis B virus (HBV) and human immunodeficiency virus (HIV).* Wherever there is a potential for employee skin, eye, mucous membrane, or parenteral (skin or membrane piercing) contact with blood or other potentially infectious sources, *employees must refer to the GZA Written Exposure Control Plan.*

☐ **Poisonous Plants.** The possible presence of poisonous plants should be anticipated for field activities in wooded or heavily vegetated areas. *Poison ivy* is a climbing plant with alternate green to red leaves (arranged in threes) and white berries. *Poison oak* is similar to poison ivy and *sumac* but its leaves are oak-like in form. The leaves of these poisonous plants produce an irritating oil which causes an intensely itching skin rash and characteristic blister-like lesions. Contact with these plants should be avoided.

☐ **Rats, Snakes and Other Vermin.** Certain animals, particularly those that feed on garbage and other wastes, can represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact with (biting) animals (such as rats) or animal waste (such as pigeon droppings) should be considered prior to all field activities. Rats, snakes and other wild animals can inflict painful bites. The bites can poisonous (as in the case of some snakes), or disease causing (as in the case of rabid animals). Avoidance of these animals is the best protection.

☐ **Waste Water and Sewage.** Sewage and waste water contaminated with raw, untreated sewage can represent significant sources of bacterial, viral or fungal contamination. Adverse effects, due to contact, can range from mild skin reactions or rashes to life threatening diseases. Diseases are easily transmitted by accidental ingestion or through skin contact, particularly if the skin is broken. Avoidance of direct contact and good personal hygiene are the best protection from these hazards.

PLAN AKNOWLEDGEMENT AND APPROVALS

Approval or Acknowledgment	SSO/CP	SS/PM	AIC/PIC	HSC
Probable hazards identified on form.		X		X
Project scope accurately reflected on form.		X	X	
Appropriate emergency response information identified on form.		X		X
Appropriate control measures identified on form.		X		X
Hazards and control measures to be implemented on site acknowledged.	X		X	
Overall project scope and health and safety requirements acknowledged.	X		X	

SSO/CP:_____
Meredith Hayes

SS/PM:_____
David Winslow

AIC/PIC:_____
Douglas Roy

HSC:_____
Stephen Kline

Attachments:
- Attachment A — Site Inspection Log
- Attachment B — Health and Safety Briefing/Site Orientation Record/Hazard Communication
- Attachment C — Subcontractor's Statement of Understanding
- Attachment D — Incident Report and/or Discovery of a Potential Hazard

Attach additional information if required. (Revised 06/03)

Attachment A
Site Inspection Log

PROJECT NAME: i.park Edgewater	**LOCATION:** 45 River Road, Edgewater, NJ
PROJECT NUMBER: 41.0161318.00,41.0161484.00	**DATE:** May 26, 2006
PROJECT MANAGER: David Winslow	**COMPLETED BY:** Meredith Hayes
SITE DESCRIPTION AND NATURE OF WORK: installation of monitoring wells, soil borings, Geoprobe borings, groundwater sampling, and geophysical survey.	

HAZARD COMMUNICATION
[ ]Chemical hazards identified
[ ]All containers properly labeled
[ ]MSDS/workplace notebook on site
[ ]Site safety briefing completed and documented

ACCIDENTS/EMERGENCY INFO
[ ]First aid personnel identified
[ ]Hospital location identified
[ ]Police/Fire/Ambulance phone numbers available
[ ]Incident investigation forms available
[ ]Fire extinguisher present

SANITATION
[ ]Washing facilities available
[ ]Toilet facilities available
[ ]Approved trash receptacle available
[ ]Water/refreshments available

STORAGE
[ ]Tools/Drill tooling/supplies safely stacked to prevent rolling or collapse
[ ]Work areas and passage ways kept clear

HOUSEKEEPING
[ ]Work areas clean and orderly
[ ]Storage areas clean and orderly
[ ]Combustible scrap/debris removed regularly
[ ]Waste containers of flammable or toxic materials covered

OVERHEAD HAZARDS
[ ]15^{ft} minimum clearance maintained
[ ]All sources of falling objects/swinging loads/ rotating equipment identified
[ ]Barriers or other methods in place to prevent injury due to overhead hazards

POSTING
[ ]Emergency phone/contact info posted
[ ]OSHA poster displayed

UNDERGROUND HAZARDS
[ ]All underground hazards identified and communicated to workers on site
[ ]Utility/Dig-Safe clearance confirmed
[ ]Clearance dates: _____
[ ]Clearance ID#: _____

EXCAVATIONS and TRENCHES
[ ]All personnel and storage at least 2^{ft} from top edge of excavation
[ ]Ladder in place
[ ]Guarding/barriers in place

VEHICULAR TRAFFIC
[ ]All vehicular traffic routes which could impact worker safety identified and communicated
[ ]Barriers or other methods established to prevent injury from moving vehicles

PEDESTRIAN TRAFFIC/SITE CONTROL
[ ]All walkways which could be impacted by site activities identified and communicated
[ ]Barriers or other methods established to prevent pedestrian injury from site activities

ENVIRONMENTAL HAZARDS
[ ]Poisonous plants/stinging or biting insects/vermin/sewage/etc. identified and communicated

COMMENTS/OTHER HAZARDS_____

_____
_____
_____
_____
_____
_____

x = OK
NA = Not Applicable

Attachment B
Health and Safety Briefing/Site Orientation Record/Hazard Communication

This is to verify that I, the undersigned, have been provided with a site (orientation) briefing, including hazard communication, regarding the safety and health considerations at _____. I agree to abide by my employer's site-specific safety and health plan and other safety or health requirements applicable to the site.

Name (Print)	Signature	Company	Date

Site (orientation) briefing conducted by: _____ Date:_____

Attachment C
Subcontractor's Statement of Understanding
Regarding Health and Safety Responsibilities

Project Name:_____

Project Number: _____

In accordance with generally accepted practices, each Subcontractor engaged by GZA is responsible for all matters relating to the health and safety of its personnel and equipment in performance of the work. This includes recognition of the potential health and safety hazards associated with the work. GZA will establish a health and safety plan or program (HASP) applicable to its own employees and its own activities on site. GZA will make its HASP available to each subcontractor for informational purposes only. Each subcontractor must establish a HASP applicable to its own employees and its own activities on site.

Subcontractors who use GZA's HASP as a model for their own HASP are responsible for determining its adequacy and applicability to its own employees and its own activities on site. Subcontractors must establish their own HASP applicable to subcontractor employees and/or activities, even if modeled after GZA's HASP and deliver this HASP in clear written form to GZA prior to the initiation of on-site activities. Submittal of the subcontractor's HASP to GZA will be for informational purposes only. Review of the subcontractor's HASP by GZA shall in no way constitute approval or endorsement by GZA of the subcontractor's HASP. It is understood that protective measures specified in the Subcontractor's HASP are minimum requirements for the work.

Subcontractor warrants that all its employees that are permitted to engage in operations that could expose them to hazardous wastes, hazardous substances, or safety or health hazards have obtained the necessary health and safety training and medical surveillance as specified in the applicable provisions of OSHA:

1926.59 Hazard Communication,
1926.52 Occupational Noise Exposure,
1926.103 Respiratory Protection,
1926.65 Hazardous Waste Operations and Emergency Response;

as well as any other applicable portion of the OSHA General Industry (29 CFR 1910) and Construction Industry (29 CFR 1926) Standards. Subcontractor shall provide GZA with evidence of the necessary certification before beginning hazardous waste work subject to OSHA 1926.65 on the project site.

Should GZA become aware of subcontractor activities on site which appear to violate OSHA or other applicable safety regulations or otherwise pose an immediate and serious threat to the safety of GZA employees, subcontractor employees, other individuals on site, or members of the public, GZA may notify the subcontractor verbally and/or in writing regarding the need for corrective action. Failure to comply with either general safety practices or health and safety practices as described above may be grounds for breach and prompt contract termination. The safety requirements of the work as described above apply without regard to time, place, or presence of a GZA representative.

THE PRESENCE OF GZA PERSONNEL ON THE SITE CARRYING OUT PROFESSIONAL ACTIVITIES DOES NOT MEAN THAT GZA UNDERTAKES TO OVERSEE THE SUBCONTRACTOR'S COMPLIANCE RESPONSIBILITIES.

The undersigned agrees that he is authorized to execute this statement of understanding on behalf of their firm:

Firm: _____

Name (Print):_____ Title:_____

Signature: _____ Date:_____

Attachment D

GZA INCIDENT INVESTIGATION FORM

CLIENT/SITE/PROJECT INFORMATION

Client/Site Name:		
Site description:		
Site Address:		
GZA Office:		
Job/Project #:	PM:	PIC:

DESCRIPTION OF INCIDENT

Date/Time of Incident:_____

Type of incident: _____Occupational Injury _____Occupational Illness _____Fatality _____Property Damage

_____Medical Treatment _____First Aid _____Lost Time _____Restricted Duty

_____Other_____

Description, nature and extent of injury, property damage, or other pertinent aspects of the incident:

_____

_____

_____

_____

_____

Name(s), nature of involvement and employer of individual(s) ***directly involved*** in the incident (injured victim, operator of equipment causing damage, etc.) or direct observer of the incident.

1) Name_____

Nature of involvement with incident:_____

_____

Employer_____

2) Name_____

Nature of involvement with incident:_____

_____

Employer_____

3) Name_____

Nature of involvement with incident:_____

_____

Employer_____

Describe the type of first aid or medical treatment provided, or other accommodations and/or responses to the incident:

_____

_____

_____

_____

Describe the employee activity at the time of the incident:_____

_____

_____

_____

_____

Describe any tools or machinery involved:_____

_____

_____

_____

_____

Describe any personal protective equipment, or other safety equipment used by employee at the time of the incident:

_____

_____

_____

_____

EXHIBITS - Identify other exhibits accompanying this form (photos, equipment, etc.):

CAUSES:

Summarize the IMMEDIATE DIRECT CAUSE(S) of the incident:

Identify any CONTRIBUTORY FACTORS OR INDIRECT CAUSES of the incident:

Identify possible ROOT CAUSES of the incident:

CORRECTIVE ACTIONS - Identify immediate/short term/interim corrective actions or measures taken and dates corrected:

RECOMMENDATIONS - Recommended changes in process, procedure, equipment or other recommendations, to correct a situation and/or prevent the incident from recurring in the future:

_____

_____

_____

_____

_____

A. PARTICIPANTS IN THE INCIDENT INVESTIGATION - NAME OF GZA EMPLOYEE(S) FILLING OUT, OR CONTRIBUTING TO THE INFORMATION IN, THIS FORM:

NAME	*ROLE/RESPONSIBILITY*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DISTRIBUTION

Director of Health and Safety: Mark Malchik, Norwood

Regional Health and Safety Coordinator:_____

District Office Manager:_____

Project Manager_____

Other:_____

APPENDIX C

GEOPHYSICAL SURVEY RESULTS

HAGER-RICHTER
GEOSCIENCE, INC.

CONSULTANTS IN GEOLOGY AND GEOPHYSICS
417 BERKELEY AVENUE
ORANGE, NEW JERSEY 07050
TELEPHONE (973) 676-3001
FAX (973) 676-4599

August 22, 2006
File 06JCC28

Meredith Hayes
GZA Environmental, Inc.
440 Ninth Avenue
New York, New York 10001

RE: Geophysical Survey
i.park Edgewater
45 River Road
Edgewater, New Jersey

Dear Ms. Hayes:

In this report, we summarize the results of a geophysical survey conducted on August 15, 2006 by Hager-Richter Geoscience, Inc. (H-R) at the above referenced site for GZA Environmental, Inc (GZA). The scope of the survey and areas of interest were specified by GZA. The geophysical survey is part of an environmental investigation by GZA.

INTRODUCTION

The i.park Edgwater site is the former Conopco, Inc. D/B/A Unilever Research and Development facility, located at 45 River Road in Edgewater, New Jersey. The general location of the site is shown in Figure 1. GZA was interested in locating a possible septic leach field in an area of interest shown in Figure 2. The AOI is located east of an electric substation located at the northwest corner of the Site. The AOI was surfaced by grass. At the time of the survey, a tree, landscaped areas and metal fences were present.

OBJECTIVE

The objective of the geophysical survey was to search for, and if detected, to locate a possible septic leach field and/or a septic tank within the accessible portions of the AOI.

THE SURVEY

Alexis Martínez and Juraj Peroncik of Hager-Richter conducted the field operations on August 15, 2006. The project was coordinated with Ms. Meredith Hayes of GZA, who was

present at the site and specified the AOI.

The geophysical survey was conducted using two complementary geophysical methods: time domain electromagnetic induction (EM61) and ground penetrating radar (GPR). The EM61 data were acquired at approximately 8-inch intervals along lines spaced 5 feet apart across the accessible portions of the areas of interest. The EM61 survey detects buried metal. However, the EM61 method cannot provide information on the type of objects causing the anomaly. In order to aid in the identification of the objects, a GPR survey was conducted along lines in two mutually perpendicular directions and spaced no more than 5 feet apart. The GPR system was used with a 250 MHz antenna and a 50 nsec[1] time window.

Metal fencing was present in the area of interest during the survey. The presence of such surface objects produce interference in the EM61 data. No piping associated with the possible septic leach field was visible at the time of the survey.

EQUIPMENT

EM61. The EM survey was conducted using a Geonics EM61-MK2 time domain electromagnetic induction metal detector. The EM61-MK2 instrument was designed specifically for detecting buried metal objects such as USTs, drums, and utilities. An air-cored transmitter coil generates a pulsed primary magnetic field in the earth, thereby inducing eddy currents in nearby metal objects. The eddy current produces a secondary magnetic field that is sensed by two receiver coils, one coincident with the transmitter and one positioned 40 cm above the main coil. By measuring the secondary magnetic field after the current in the ground has dissipated but before the current in metal objects has dissipated, the instrument responds only to the secondary magnetic field produced by metal objects. Four channels of secondary response are measured in mV and are recorded on a digital data logger. The system is generally operated by pulling the coils configured as a trailer with an odometer mounted on the axle to trigger the data logger automatically at approximately 8-inch intervals.

GPR. The GPR survey was conducted using a Sensors & Software Smart Cart Noggin Plus digital subsurface imaging radar system. The system includes a survey wheel that triggers the recording of data at fixed intervals, thereby increasing the accuracy of the locations of features detected along the survey lines. The GPR system was used with a 250 MHz antenna and a 50 nsec time window.

---

[1]ns, abbreviation for nanosecond, 1/1,000,000,000 second. Light and the GPR signal require about 1 ns to travel 1 ft in air. The GPR signal requires about 3.5 ns to travel 1 ft in unsaturated sandy soil.

LIMITATIONS OF THE METHODS

HAGER-RICHTER GEOSCIENCE, INC. MAKES NO GUARANTEE THAT THE SEPTIC LEACH FIELD OR A SEPTIC TANK WAS DETECTED IN THIS SURVEY. HAGER-RICHTER GEOSCIENCE, INC. IS NOT RESPONSIBLE FOR DETECTING SEPTIC LEACH FIELDS THAT CANNOT BE DETECTED BY THE METHODS EMPLOYED OR BECAUSE OF SITE CONDITIONS. HAGER-RICHTER IS NOT RESPONSIBLE FOR MAINTAINING MARKOUTS AFTER LEAVING THE WORK AREA. MARKOUTS MADE DURING INCLEMENT WEATHER OR IN HIGH TRAFFIC AREAS MIGHT NOT LAST.

EM61. The EM61 cannot detect non-metallic objects. The data from an EM61 survey are adversely affected by surface metal, and subsurface information cannot be determined at and near the surface metal. The EM61 has a depth sensitivity limited to about 12 feet. The instrument is relatively cumbersome, and works best where the transmit/receive coils can be hand pulled in a small trailer.

Detection and identification should be clearly differentiated. Detection is the recognition of the presence of a metal object, and the electromagnetic method is excellent for such purposes. Identification, on the other hand, is determination of the nature of the causative body (i.e., what is the body -- a cache of drums, UST, automobile, white goods, etc.?). Although the EM61 data cannot be used to *identify* all buried metal objects, they provide excellent guides to the identification of some objects. For example, buried metal utilities produce anomalies with lengths many times their widths.

GPR. There are limitations of the GPR technique as used to detect and/or locate targets such as those of the objectives of this survey: (1) surface conditions, (2) electrical conductivity of the ground, (3) contrast of the electrical properties of the target and the surrounding soil, and (4) spacing of the traverses. Of these restrictions, only the last is controllable by us.

The condition of the ground surface can affect the quality of the GPR data and the depth of penetration of the GPR signal. Sites covered with snow piles, high grass, bushes, landscape structures, debris, obstacles, soil mounds, etc. limit the survey access and the coupling of the GPR antenna with the ground. In many cases, the GPR signal will not penetrate below concrete pavement, especially inside buildings, and a target may not be detectable. The GPR method also commonly does not provide useful data under canopies found at some facilities.

The electrical conductivity of the ground determines the attenuation of the GPR signals, and thereby limits the maximum depth of exploration. For example, the GPR signal does not

penetrate clay-rich soils, and targets buried in clay might not be detected.

A definite contrast in the electrical conductivities of the surrounding ground and the target material is required to obtain a reflection of the GPR signal. If the contrast is too small then the reflection may be too weak to recognize, possibly due to deeply corroded metal in the target, the target can be missed.

Spacing of the traverses is limited by access at many sites, but where flexibility of traverse spacing is possible, the spacing is adjusted to the size of the target.

RESULTS

General. The geophysical survey consisted of an EM61 survey and a GPR survey in the accessible portions of the specified AOI. Figure 3 is a color contour plot of the EM61 results. The locations of the GPR traverses and our integrated interpretation of the geophysical data are shown in Figure 4.

EM61. Interpretation of EM61 data is based on the *relative* response (in millivolts) of the top and bottom instrument coils to local conditions. The differential response, the difference between the top and bottom coils, is commonly used as a sensitive indication of the location of buried metal objects, and is shown in the figures for this report. The instrument is not calibrated to provide an absolute measure of a particular property, such as the conductivity of the soil or the strength of the earth's magnetic field. Subsurface metal objects produce sharply defined positive anomalies when the EM61 is positioned directly over them. Such anomalies are colored green to pink on the color plots presented herein. Acquiring data at short intervals along closely spaced lines, as was done at the subject site, provides high spatial resolution of the location of the targets. Thus, buried metal is recognized in contour plots of EM data by positive anomalies roughly corresponding to the dimensions of the buried metal.

Surface metal objects also produce positive EM anomalies. Surface metal in catch basins and metal fences was present in the subject AOI. The locations of surface metal and anomalies attributed to surface metal are noted on Figure 4. We note that the presence or absence of subsurface metal in such areas cannot be determined on the basis of the EM data alone due to the anomaly caused by the surface metal object.

Several linear EM61 anomalies are attributed to possible utilities, some of which are shown on the PMK base plan and confirm their presence. Other relatively low amplitude anomalies are attributed to the presence of buried metal.

GPR. The locations of the GPR survey traverses is shown in Figure 4. The apparent

GPR signal penetration was variable, with reflections received for about 25-35 nsec. Based on handbook time-to-depth conversions for the GPR signal in average soils, the GPR signal penetration is estimated to have been approximately 2.5-3.5 feet.

The GPR records do not contain reflections typical of a possible septic tank. The GPR records show reflections typical of segments of utilities and scattered small unidentified buried objects, and their locations are shown on Figure 4. Based on the geophysical records alone we cannot determine the nature of the detected utilities except for those that correlate with utilities shown on the GZA base plan, therefore we cannot infer that the detected utilities are associated with a possible septic leach field. At the time of the survey no piping was visible on surface.

CONCLUSIONS

Based on the geophysical survey performed by Hager-Richter Geoscience at a site designated as i.Park Edgewater, 45 River Road, Edgewater, New Jersey, we conclude that:

- No septic tanks were detected in the areas investigated. No septic tanks with: (1) electrical properties to produce an EM61 anomaly or sufficiently contrasting with the surrounding soils to produce GPR reflections, or (2) a capacity of 500 gallons or more was detected within the effective depth a) of investigation with the EM61 (about 16 feet) or b) of penetration of the GPR signal. *Whether a septic tanks occurs at a depth greater than the effective depth a) of investigation with the EM61 (about 16 feet) or b) of penetration of the GPR (2.5-3.5 feet) signal or in areas inaccessible to the geophysical survey cannot be determined from the geophysical data.*

- Several possible utilities were detected in the AOI. Whether the detected utilities are associated with a possible septic leach field cannot be determined on the basis of the geophysical data alone.

LIMITATIONS ON USE OF THIS REPORT

This letter report was prepared for the exclusive use of GZA Environmental, Inc (Client). No other party shall be entitled to rely on this Report or any information, documents, records, data, interpretations, advice or opinions given to Client by Hager-Richter Geoscience, Inc. (H-R) in the performance of its work. The Report relates solely to the specific project for which H-R has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project or any other purpose without the express written permission of H-R. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to H-R.

H-R has used reasonable care, skill, competence and judgment in the performance of its services for this project consistent with professional standards for those providing similar services at the same time, in the same locale, and under like circumstances. Unless otherwise stated, the work performed by H-R should be understood to be exploratory and interpretational in character and any results, findings or recommendations contained in this Report or resulting from the work proposed may include decisions which are judgmental in nature and not necessarily based solely on pure science or engineering. It should be noted that our conclusions might be modified if subsurface conditions were better delineated with additional subsurface exploration including, but not limited to, test pits, soil borings with collection of soil and water samples, and laboratory testing.

Except as expressly provided in this limitations section, H-R makes no other representation or warranty of any kind whatsoever, oral or written, expressed or implied; and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.

If you have any questions or comments on this letter report, please contact us at your convenience. It has been a pleasure to work with GZA on this project. We look forward to working with you again in the future.

Sincerely yours,
HAGER-RICHTER GEOSCIENCE, INC.

Alexis Martínez
Senior Geophysicist

Dorothy Richter, P.G.
President

Attachments: Figures 1 - 4

I.PARK EDGEWATER
45 RIVER ROAD
EDGEWATER, NEW JERSEY

Prepared for:

GZA Environmental, Inc.
440 Ninth Avenue
New York, New York 10001

Prepared by:

Hager-Richter Geoscience, Inc.
417 Berkeley Avenue
Orange, New Jersey 07050

File 06JCC28
August, 2006

N

H-R

LOCATION

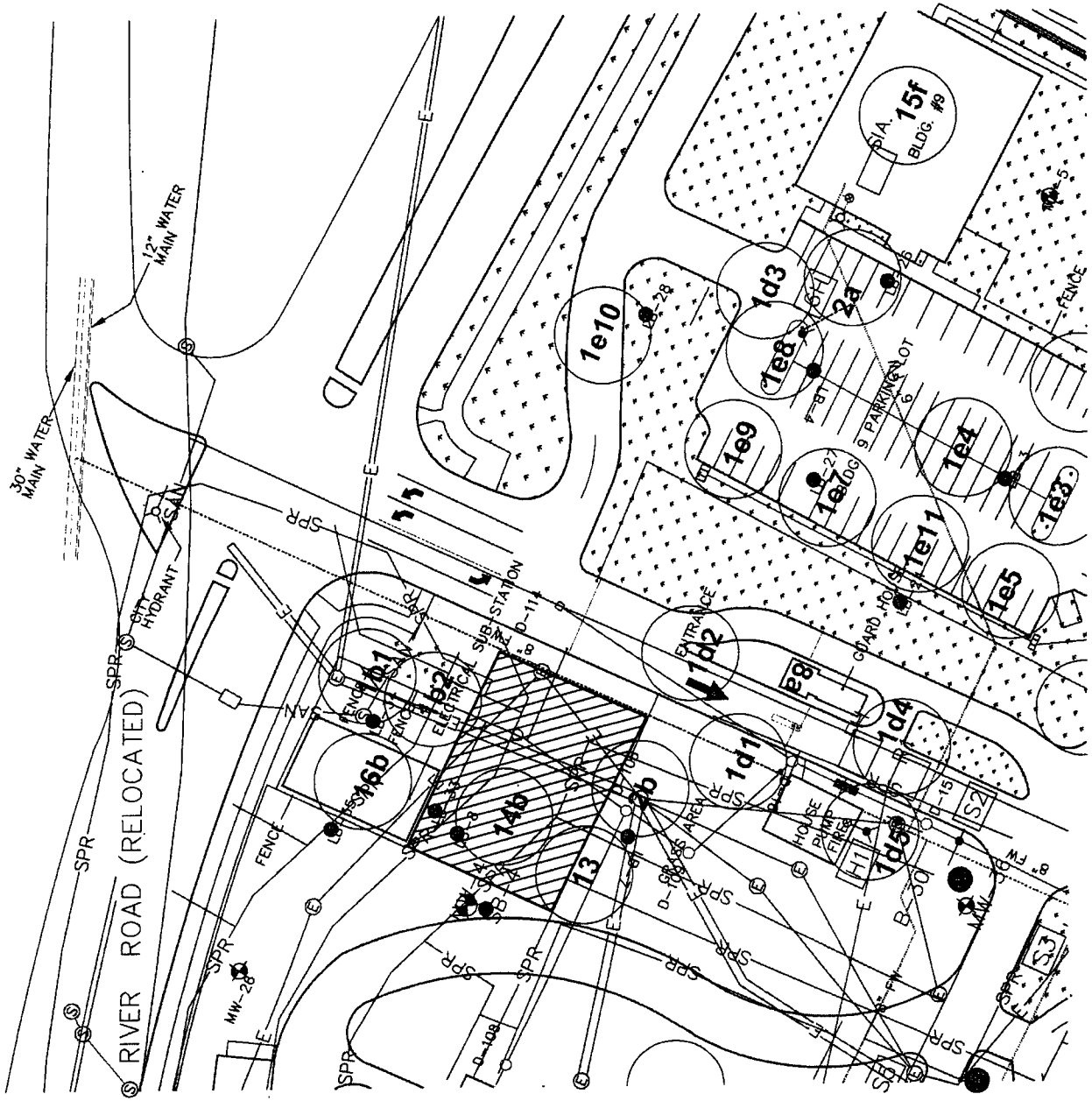
SCALE (feet)

0 2000 4000

Figure 1
General Site Location
i.park Edgewater
Edgewater, New Jersey

File 06JCC28 | August, 2006

HAGER–RICHTER GEOSCIENCE, INC.
Orange, New Jersey



N

H-R

LEGEND

APPROXIMATE LIMITS OF GEOPHYSICAL SURVEY AREA

SCALE (feet)

0 80 160

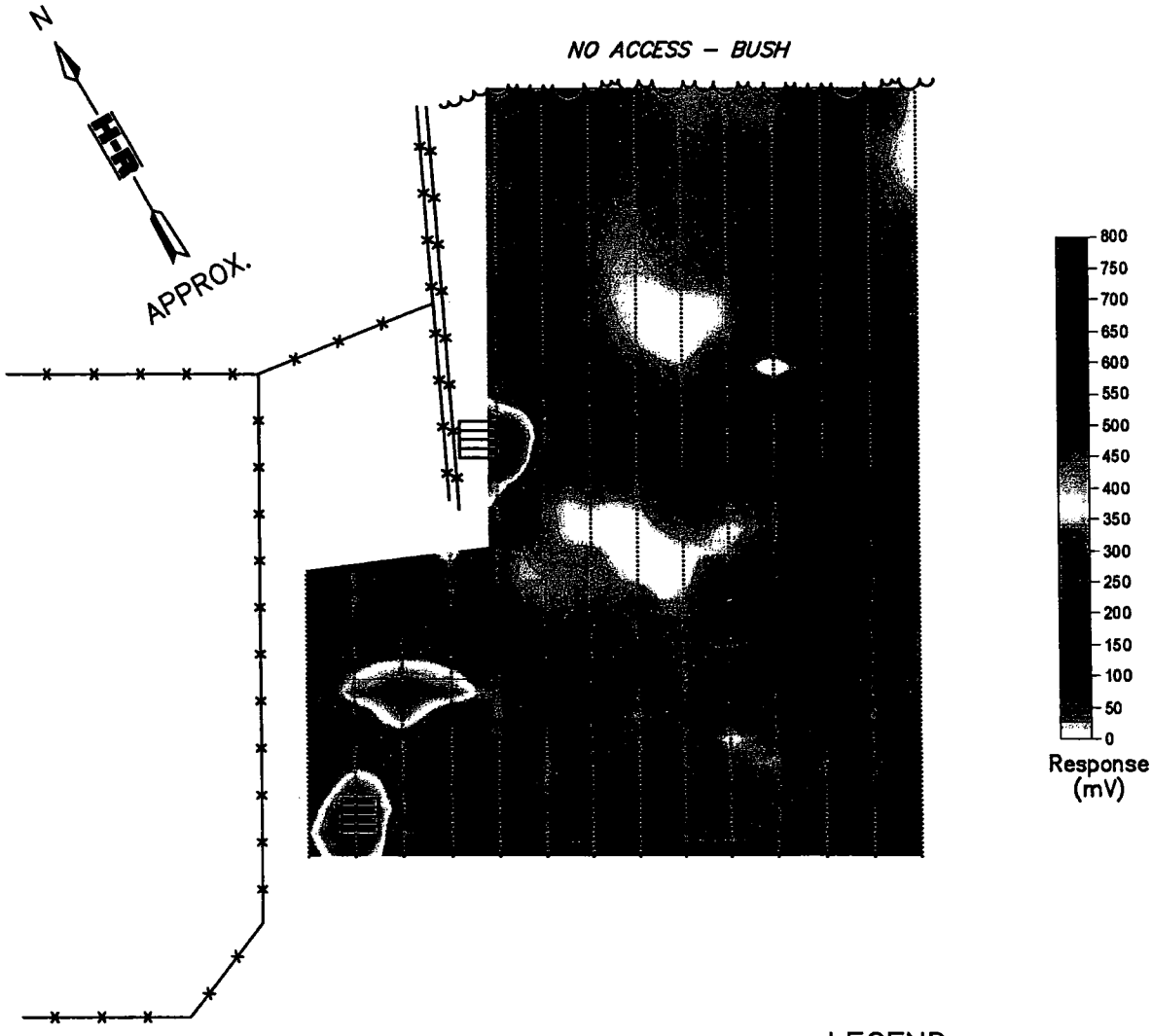
NOTE:

Modified from site plan provided by GZA.

Figure 2
Site Plan
i.park Edgewater
Edgewater, New Jersey

File 06JCC28 | August, 2006

HAGER–RICHTER GEOSCIENCE, INC.
Orange, New Jersey



LEGEND

- DATA STATIONS
- CATCH BASIN
- STAKE: PS & DS54
- FENCE

SCALE (feet)

0 20 40

NOTES:

1. Site sketch generated from field notes.
2. Data were acquired with Geonics EM61. Differential response shown.
3. Differential response equals top coil response – bottom coil response.

Figure 3
EM Survey
i.park Edgewater
Edgewater, New Jersey

File 06JCC28 | August, 2006

HAGER–RICHTER GEOSCIENCE, INC.
Orange, New Jersey

APPENDIX D

SOIL BORING AND WELL INSTALLATION LOGS

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT	REPORT OF BORING NO.	GZA-64
41.0161484.00	SHEET	1 of 1
i.Park Edgewater, NJ	FILE NO.	41.0161484.00
	CHKD BY	DW

BORING CO.	Summit Drilling	BORING LOCATION	See boring location plan		
FOREMAN	Dennis Crayon	GROUND SURFACE ELEV.	15	DATUM	NGVD, 1929
GZA ENGINEER	B. Issac / M. Hayes	DATE START	6/1/06	DATE END	6/1/06

SAMPLER: Geoprobe™ - 2" diameter, 48-inch long, clear acetate liner, installed with a hydraulic hammer.

DPTH (FT)	SAMPLE NO	SAMPLE PEN/REC	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/36	0 - 5	Black, silty fine to coarse SAND, little fine Gravel. (1 ft of black hard tar with peat)	FILL		0.5	
2								
4							11.9	
	2	60/24	5 - 10	Black, fine to coarse Silty SAND. (1 ft of hard paper tar with decomposing organics and fine gravel.)	SILTY SAND PEAT and GRAVEL	Temporary Well		
6							0.6	
8								
10							1.0	
	3	60/30	10 - 15	Gray CLAY	CLAY			
12							0.9	
14								
							1.1	
16				End of Boring - 15 feet below ground				

REMARKS:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-64

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 I.Park Edgewater, NJ	REPORT OF BORING NO. GZA-65 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO.	Summit Drilling	BORING LOCATION	See boring location plan
FOREMAN	Dennis Crayon	GROUND SURFACE ELEV. 15	DATUM NGVD, 1929
GZA ENGINEER	B. Issac / M. Hayes	DATE START 6/1/06	DATE END 6/1/06

SAMPLER: Geoprobe™ - 2" diameter, 60-inch long, clear acetate liner, installed with a hydraulic hammer.

DPTH (FT)	SAMPLE NO	PEN/REC	DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
0	1	60/24	0 - 5	Brown/black Silty SAND (1.5 ft of hard to soft tar silty sand and peat)	FILL			
2								
4							1.3	
6	2	60/30	5 - 10	Black, fine to coarse Silty SAND, little fine Gravel changing to black, fine to coarse Silty SAND, some Peat. (little tar mixed with silty sand through core interval)	SILTY SAND	Temporary Well	15.6	
8							3.0	
10							3.6	
12	3	60/36	10 - 15	Black, fine to coarse Silty SAND, little fine Gravel, changing to gray CLAY.	SILTY SAND CLAY		6.5	
14							7.8	
16				End of Boring - 15 feet below ground				

REMARKS:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT	REPORT OF BORING NO.	GZA-66
41.0161484.00	SHEET	1 of 1
i.Park Edgewater, NJ	FILE NO.	41.0161484.00
	CHKD BY	DW

BORING CO.	Summit Drilling	BORING LOCATION	See boring location plan
FOREMAN	Dennis Crayon	GROUND SURFACE ELEV. 15	DATUM NGVD, 1929
GZA ENGINEER	B. Issac / M. Hayes	DATE START 6/1/06	DATE END 6/1/06

SAMPLER: Geoprobe™ - 2" diameter, 48-inch long, clear acetate liner, installed with a hydraulic hammer.

DPTH (FT)	SAMPLE NO	SAMPLE PEN/REC	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/30	0 - 5	Gray, fine to coarse Silty SAND, little fine Gravel.	FILL			
2								
							2.1	
4							1.2	
	2	60/30	5 - 10	Gray fine to coarse SAND, some fine Gravel, little Silt, changing to gray CLAY.	GRAVELLY SAND	▼ Temporary Well		
6				(1.5 ft of black, hard tar with organic material above clay layer)	CLAY			
8							11.0	
							16.2	
10							1.0	
				End of Boring - 10 feet below ground				
12								
14								
16								

REMARKS:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT	REPORT OF BORING NO.	GZA-67
41.0161484.00	SHEET	1 of 1
i.Park Edgewater, NJ	FILE NO.	41.0161484.00
	CHKD BY	DW

BORING CO.	Summit Drilling	BORING LOCATION	See boring location plan		
FOREMAN	Dennis Crayon	GROUND SURFACE ELEV.	15	DATUM	NGVD, 1929
GZA ENGINEER	B. Issac / M. Hayes	DATE START	6/1/06	DATE END	6/1/06

SAMPLER: Geoprobe™ - 2" diameter, 48-inch long, clear acetate liner, installed with a hydraulic hammer.

DPTH (FT)	SAMPLE NO	SAMPLE PEN/REC	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/6	0 - 5	Brown, fine to coarse Silty SAND, little fine Gravel.	FILL			
2								
4							0.7	
	2	60/30	5 - 10	Brown/gray, fine to coarse Silty SAND, trace Gravel.	FILL	Temporary Well		
6								
8							1.2	
10							19.8	
	3	60/36	10 - 15	Gray, fine to coarse Silty SAND, trace Gravel over gray CLAY	SILTY SAND			
12				(6 inches of hard tar with gray fine to coarse silty sand above the clay layer)	CLAY		21.8	
							22.4	
14								
16				End of Boring - 15 feet below ground				

REMARKS:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT
41.0161484.00
i.Park Edgewater, NJ

REPORT OF BORING NO. GZA-68
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit Drilling
FOREMAN Dennis Crayon
GZA ENGINEER B. Issac / M. Hayes
BORING LOCATION See boring location plan
GROUND SURFACE ELEV. 15
DATUM NGVD, 1929
DATE START 6/1/06
DATE END 6/1/06

SAMPLER: Geoprobe™ - 2" diameter, 48-inch long, clear acetate liner, installed with a hydraulic hammer.

DPTH (FT)	SAMPLE NO	SAMPLE PEN/REC	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/24	0 - 5	Brown, fine to coarse Silty SAND, trace Gravel.	FILL			
2							0.5	
4							0.6	
	2	60/42	5 - 10	Brown, Silty SAND.	SILTY SAND	Temporary Well		
6				(2 feet of tar in balck/brown fine to coarse silty sand)				
8							0.9	
							5.7	
10							28.0	
	3	60/6	10 - 15	Black, fine to coarse Silty SAND, little Gravel.	SILTY SAND			
12								
14								
							9.2	
16				End of Boring - 15 feet below ground				

REMARKS:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-68

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-70
SHEET 1 of 1
FILE NO. 41.0181484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.60395° N 73.993009° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/23/06 DATE END 8/23/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/6	5-7	4	Very loose, black fine to coarse SAND, trace Silt, trace fine Gravel.			0.0
					3				
					2			FILL	
7.0					3				
		S2	24/24	7-9	4	Very dense, black, medium to coarse sand, little fine Gravel, trace Silt (hard crushed P/A material bottom 4" of spoon).			0.6
					3				3.2
					50/2				67.1
9.0									101
		S3	24/6	9-11	28	Medium dense, black, fine to medium SAND, little Silt (trace brick fragments, hard P/A material in shoe).			0.0
					20				0.0
					4				
11.0					12				
		S4	24/3	11-13	6	Slough			0.0
					4				
					4				
13.0					3				
		S5	24/24	13-15		Gray SILTY CLAY.			8.3
								SILTY CLAY	15.1
									20.2
15.0							1		31.3

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. End of boring @ 15'.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

GZA GEOENVIRONMENTAL OF NEW YORK
140 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-71
SHEET 1 of 2
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit DRILLING RIG
FOREMAN Jeff Segreaves TYPE OF DRILLING HSA
GZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80402° N 73.99249° N)
GROUND SURFACE ELEV. DATUM
DATE START 8/18/06 DATE END 8/18/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/6	5-7	5	Very loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt.			0.0
					7				
					WOH				
7.0					WOH			FILL	
		S2	24/6	7-9	WOH	Very loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt.			0.0
					WOH				
					8				
9.0					9				
		S3	24/18	9-11	9	Loose, black, fine to coarse SAND, trace Silt, trace fine Gravel.			0.0
					7				0.0
					7				0.0
11.0					9				
		S4	24/24	11-13	15	Medium dense, black to gray, fine to coarse SAND, little fine Gravel, trace Silt.			0.0
					13				0.0
					14				0.0
13.0					9				0.0
		S5	24/12	13-15	20	Medium dense, black to gray, fine to coarse SAND, little fine Gravel, trace Silt.			0.0
					18				0.0
					18				0.0
15.0					14				0.0

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

ZA GEOENVIRONMENTAL OF NEW YORK
NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-71
SHEET 2 of 2
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit DRILLING RIG
REMAN Jeff Segreaves TYPE OF DRILLING HSA
A ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80402° N 73.99249° N)
GROUND SURFACE ELEV. DATUM
DATE START 8/18/06 DATE END 8/18/06

MPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb MMER FALLING 24 IN.

SING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

EPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R *K	STRATUM DESCRIPTION	FIELD TESTING
		S6	24/6	15-17		Gray SILTY CLAY (organic material, organic odor)		SILTY CLAY	0.0
0									
						End of boring @ 17'.			
.0									
21.0									
.0									
.0									
.0									
.0									

GRANULAR SOILS BLOWS/FT	DENSITY	COHESIVE SOILS BLOWS/FT	CONSISTENCY
0-4	VERY LOOSE	<2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	M. STIFF
0-50	DENSE	8-15	STIFF
>50	VERY DENSE	15-30	V. STIFF
		>30	HARD

REMARKS:

OTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-71

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-72
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80387° N 73.99317° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/21/06 DATE END 8/21/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
			24/18	5-7	8	Loose, brown, fine to coarse SAND, trace Silt, changing after 6" to black coarse SAND (and crushed hard P/A material).			0.0
		S1			4				0.0
					3				11.8
7.0					3			FILL	
			24/20	7-9	10	Medium dense, black, coarse SAND (and crushed hard P/A material), changing after 14" to taffy-like P/A material.			3.1
		S2			15				27.9
					20				18.6
9.0					30				10
			24/24	9-11	53	Dense, black, medium to coarse SAND, trace fine Gravel, (and crushed hard P/A material).			0.0
		S3			50				8.3
					41				9.4
11.0					21				1.2
			24/24	11-13	30	Medium dense, black, medium to coarse SAND, trace fine Gravel (some crushed hard P/A material, gray SILTY/CLAY in bottom of spooon).			0.0
		S4			20				0.2
					18				0.3
13.0					15				0.3
			24/24	13-15		slough	1.	SILTY CLAY	
		S5							
15.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. End of boring @ 15'.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-72

GZA GEOENVIRONMENTAL OF NEW YORK

ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-73/MW-51

SHEET 1 OF 2

BORING CO.	Summit	BORING LOCATION	See Exploration Location Plan
FOREMAN	Jeff Segreaves	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Meredith Hayes	DATE START 8/23/06	DATE END 8/23/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 LB HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER IN	CASING	REMARKS

DEPTH (FEET)	CASING BLOWS	SAMPLE NO.	SAMPLE PENETRATION/RECOVERY (INCHES)	SAMPLE DEPTH (FEET)	BLOWS/6"	SAMPLE DESCRIPTION AND STRATIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	PID (PPM)
						vacuum excavated to 5'		CAP		
2.0										
4.0										
5.0										
			24/18	5-7	9	Loose, brown to black, fine to medium SAND, trace Silt, trace fine Gravel.			0.0	
					7				0.9	
					5				0.0	
6.0					4					
			24/18	7-9	9	Medium dense, black, fine to medium SAND, trace Silt (2" geotextile fabric with P/A material at bottom).	FILL		1.1	
					15				13.8	
					10				6.6	
8.0					11					
			24/6	9-11	4	Loose, black, fine to medium SAND, trace Silt.			0.0	1.
					3					
					4					
10.0					4					
			24/24	11-13		Gray SILTY CLAY (organic material).	SILTY CLAY		0.0	
									0.0	
									0.0	
12.0									0.0	
						End of boring @ 12'.				
14.0										

GRANULAR SOILS

BLOWS/FT. + FOOT | DENSITY

0-4 VERY LOOSE

5-10 LOOSE

11-30 MEDIUM DENSE

31-50 DENSE

>50 VERY DENSE

COHESIVE SOILS

BLOWS/FT. | CONSISTENCY

<2 VERY SOFT

2-4 SOFT

5-8 MEDIUM STIFF

9-15 STIFF

16-30 VERY STIFF

>30 HARD

REMARKS:

1. Sampled GZA-73/MW-51 (8-8.5') at 1020 for PP+40.

NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-73/MW-51

GZA GEOENVIRONMENTAL OF NEW YORK 40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 Lpark Edgewater 45 River Road, Edgewater, NJ	REPORT OF BORING NO. GZA-74 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO.	ADT	BORING LOCATION	See Exploration Location Plan
FOREMAN	Yuri Nedved	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Eugen Cela	DATE START 8/28/06	DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	SAMPLE PEN/REC (FT)	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
				vaccum excavated to 4' bgs				
4								
	1	60/20	4-9	Brown/black, fine to coarse Silty SAND, sulfur-like odor (first 10" of split spoon recovery), changing to black fine to coarse Silty SAND, sulfur-like odor (last 10" of split spoon recovery).	FILL		0.4 ppm 0.8 ppm	1
9								
				End of boring @ 9' bgs				
14								

REMARKS:

1 - Soil sample was collected from 8 - 8.5 feet bgs.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-74

GZA GEOENVIRONMENTAL OF NEW YORK 40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 I.park Edgewater 45 River Road, Edgewater, NJ	REPORT OF BORING NO. GZA-77 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO.	ADT	BORING LOCATION	See Exploration Location Plan
FOREMAN	Yuri Nedved	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Eugen Cela	DATE START 8/28/06	DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	SAMPLE PEN/REC (FT)	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/10	0-5	Brown fine to coarse Silty SAND, little fine to medium Gravel.	FILL		NM	
5	2	60/20	5-10	Brown , fine to coarse Silty SAND with GRAVEL (first 10" of split spoon recovery) changing to black fine to coarse Silty SAND, sulfur-like odor (last 10" of split spoon recovery).			NM	1
10	3	24/20	10-12	Black, fine to coarse Silty SAND (first 38" of split spoon recovery), changing to brown/gray SILTY CLAY, sulfur-like odor (last 2" of split spoon recovery).	SILTY CLAY		NM	2
15				End of boring 12' bgs (refusal on concrete slab)				

REMARKS:

1- Soil sample was collected from 8 - 8.5 feet bgs

2- PID readings not available due to instrument calibration problems.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 Lpark Edgewater 45 River Road, Edgewater, NJ	REPORT OF BORING NO. GZA-78 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO.	ADT	BORING LOCATION	See Exploration Location Plan
FOREMAN	Yuri Nedved	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Eugen Cela	DATE START 8/28/06	DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	SAMPLE PEN/REC (FT)	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/30	0-5	Brown fine to coarse Silty SAND with GRAVEL (first 20" of split spoon recovery), changing to brown fine Silty SAND, some Gravel (last 10" of split spoon recovery).			NM	
5					FILL		NM	
	2	60/60	5-10	Brown/black, fine to coarse Silty SAND, little Gravel (first 50" of split spoon recovery), changing to black fine Silty Sand, sulfur-like odor (last 10" of split spoon recovery).			NM	1
10							NM	
	3	60/40	10-15	Black, fine to coarse Silty SAND sulfur-like odor (first 30" of split spoon recovery), changing to brown/gray SILTY CLAY,sulfur-like odor (last 10" of split spoon recovery).			NM	
15					SILTY CLAY		NM	2, 3

REMARKS:

1- Soil sample was collected from 8 - 8.5 feet bgs

2- PID readings not available due to instrument calibration problems.

3- End of boring 15' bgs.

NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

GZA GEOENVIRONMENTAL OF NEW YORK 40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 Lpark Edgewater 45 River Road, Edgewater, NJ	REPORT OF BORING NO. GZA-79 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO. ADT — BORING LOCATION See Exploration Location Plan

FOREMAN Yuri Nedved — GROUND SURFACE ELEV. _____ — DATUM _____

GZA ENGINEER Eugen Cela — DATE START 8/28/06 — DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	PEN/REC (FT)	DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/30	0-5	Brown fine to coarse Silty SAND, little fine Gravel (first 5" of split spoon recovery). Black fine SAND little sulfur-like odor, presence of Peat and wood-like fragments (following 2" of split spoon recovery). Brown, fine Silty SAND (last 23" of split spoon recovery).			NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
5					FILL		NM	
	2	36/30	5-8	Brown, fine to coarse Silty SAND (first 2" of split spoon recovery) changing to black, fine Silty SAND, sulfur-like odor following 28 " of split spoon recovery).			NM	
							NM	
							NM	
							NM	
							NM	
							NM	
8							NM	
	3	60/30	8-13	Black, fine to coarse Silty SAND, little fine Gravel (first 25" of split spoon recovery), changing to brown/black SILTY CLAY (last 5").			NM	1
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
13					SILTY CLAY		NM	3

REMARKS:

1- Soil sample was collected from 8 - 8.5 feet bgs

2- PID readings not available due to instrument calibration problems.

3- End of boring 15' bgs.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

GZA GEOENVIRONMENTAL OF NEW YORK
140 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-81
SHEET 1 of 2
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit DRILLING RIG
FOREMAN Jeff Segreaves TYPE OF DRILLING HSA
GZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80396° N 73.99233° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/21/06 DATE END 8/21/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/18	5-7	10	Loose, brown to black, fine to coarse SAND, little Silt, trace fine Gravel (organic material).			0.0
					8				3.0
					7				2.9
7.0					9				
		S2	24/24	7-9	10	Medium dense, black, fine to medium SAND, some Silt, (organic material, some sheen).			0.2
					12				2.4
					13		1.		8.6
9.0					18				13.1
		S3	24/24	9-11	20	Medium dense, black, fine to medium SAND, some Silt, (slight sheen).		FILL	0.0
					25				0.0
					15				12.3
11.0					4				13.5
		S4	24/24	11-13	20	Medium dense, black, fine to medium SAND, little Silt, trace fine Gravel (organic material).			0.0
					18				0.0
					27				0.0
13.0					21				1.7
		S5	24/24	13-15		Black, fine to medium SAND, little Silt (6" geotextile fabric with P/A material between layers @ 14.5').			0.0
									0.7
									1.2
15.0									0.0

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. Sample GZA-81 (8-8.5') taken at 0843 for PP+40.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-81

GZA GEOENVIRONMENTAL OF NEW YORK
0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-81
SHEET 2 of 2
FILE NO. 41.0181484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
REMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
A ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80396° N 73.99233° W)
GROUND SURFACE ELEV. ____ DATUM ____
DATE START 8/21/06 DATE END 8/21/06

MPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
MMER FALLING 24 IN.
SING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
		S6	24/12	15-17	8	Loose, black, fine to medium, SAND, little Silt, changing after 6" to black SILTY CLAY (organic material).		FILL	0.0
					7				23.2
					5			SILTY CLAY	10.3
.0					4		2.		
						End of boring @ 17'.			
.0									
21.0									
.0									
25.0									
.0									
.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
0-30	MEDIUM DENSE
0-60	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

2. End of boring @ 17' bgs.

OTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-81

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-82
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit DRILLING RIG
FOREMAN Jeff Segreaves TYPE OF DRILLING HSA
GZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80397° N 73.99230° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/18/06 DATE END 8/18/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.
CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
			24/18	5-7	1	Loose, brown, fine to medium SAND, little Silt (little wood fragments).			0.0
					4				0.0
					7				0.0
7.0					8				
			24/24	7-9	14	Medium dense, brown to black, fine to coarse SAND, little Silt, little fine Gravel (slight organic odor).			0.0
					16				0.0
					12			FILL	0.0
9.0					16				0.0
			24/24	9-11	6	Medium dense, black, fine to coarse SAND, little Silt, little fine Gravel (slight organic odor).			3.0
					7				12.2
					6				7.2
11.0					5				0.0
			24/24	11-13	10	Medium dense, brown to black, fine to coarse SAND, little Silt, little fine Gravel (slight organic odor).			9.0
					12				6.6
					15				51.6
13.0					15				2.0
			24/18	13-15	10	Medium dense, brown to black, fine to coarse SAND, little Silt, little fine Gravel changing after 1' to brown, fine to coarse SAND AND GRAVEL (gray SILTY CLAY in bottom of spoon).			6.0
					12				1.1
									0.0
15.0							1.	SILTY CLAY	

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. End of boring @ 15'.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-82

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-83
SHEET 1 of 2
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80382° N 73.99220° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/18/06 DATE END 8/18/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/16	5-7	5	Very loose, black, fine to coarse SAND, little Silt, trace fine Gravel (slight sheen).			0.0
					3				0.0
					3				0.0
7.0					3				
		S2	24/24	7-9	3	Loose, black, fine to coarse SAND, little Silt, trace fine Gravel (brick fragments, slight odor, slight sheen).		FILL	0.0
					3				0.0
					8				1.2
9.0					10				0.0
		S3	24/18	9-11	5	Medium dense, black, fine to coarse SAND (slight odor and sheen, 2" geotextile fabric with P/A material at 10' bgs).			
					7				1.3
					9				5.6
11.0					11				0.9
		S4	24/24	11-13		Black fine to coarse SAND, little fine Gravel, trace Silt (slight sheen).			0.0
									0.0
									0.0
13.0									0.0
		S5	24/0	13-15					
15.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

GZA GEOENVIRONMENTAL OF NEW YORK
[redacted]0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
[redacted]NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-83
SHEET 2 of 2
FILE NO. 41.0181484.00
CHKD BY DW

[redacted]ORING CO. Summit DRILLING RIG
[redacted]REMAN Jeff Segreaves TYPE OF DRILLING HSA
[redacted]A ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80382° N 73.89220° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/18/06 DATE END 8/18/06

[redacted]MPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF [redacted]" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb [redacted]AMMER FALLING 24 IN.
[redacted]ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION / BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
		S6	24/18	15-17		Gray, SILTY CLAY (some organic material, slight petroleum-like odor, black "veins" of discoloration in clay).		SILTY CLAY	0.0 0.0 0.0
[redacted].0						End of boring @ 17' bgs.			
[redacted]9.0									
21.0									
[redacted]3.0									
25.0									
[redacted]7.0									
[redacted]9.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
[redacted]0-30	MEDIUM DENSE
[redacted]0-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

[redacted]OTES.
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-83

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-84
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80376° N 73.98214° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/17/06 DATE END 8/17/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/6	5-7	39	Medium dense, brown, fine to coarse SAND, some fine Gravel, trace Silt.			0.0
					30				
					16				
7.0					21				
		S2	24/4	7-8	47	Very dense, brown, fine to coarse SAND, some fine Gravel, trace Silt.		FILL	0.0
					69				
					50/1				
9.0						End of boring @ 8' bgs (refusal).	1.		
		S3							
11.0									
		S4							
13.0									
		S5							
15.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. Ateempted to move borehole 10' NE to avoid obstrctuion. Could not drill through obstruction.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-84

GZA GEOENVIRONMENTAL OF NEW YORK
0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-85
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

RING CO. Summit DRILLING RIG
REMAN Jeff Segreaves TYPE OF DRILLING HSA
ZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80371° N 73.89186° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/16/06 DATE END 8/16/06

MPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

ASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
AMMER FALLING 24 IN.
ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 4' bgs			
0									
4.0		S1	24/18	4-6	27	Dense, brown, fine to medium SAND, little fine Gravel, trace Silt, changing after 6" to brown, fine to medium SAND, trace Silt.			0.0
					36				0.0
					35			FILL	0.0
0					30				
		S2	24/24	6-8	27	Dense, brown, fine to medium SAND, trace Silt, changing after 1' to black medium SAND, some fine Gravel, trace Silt (brick fragments, very slight petroleum-like odor).			0.0
					30				0.0
					30				0.0
0					27				0.0
		S3	24/10	8-10	37	Dense, brown, fine to medium SAND, trace Silt, trace fine Gravel, changing after 4" to black, fine to medium SAND, trace Silt, trace fine Gravel (petroleum-like odor).			2.2
					44				
					33				
10.0					33				
		S4	24/18	10-12	67	Very stiff, gray, SILTY CLAY (petroleum-like staining on spoon but not observed to penetrate clay layer).			105
					31			SILTY CLAY	153
					19				119
2.0					19				
						End of boring @ 12' bgs.			
1.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
0-30	MEDIUM DENSE
0-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

OTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-85

GZA GEOENVIRONMENTAL OF NEW YORK
[illegible]0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
[illegible]NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-86
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

[illegible]RING CO. Summit DRILLING RIG
[illegible]REMAN Jeff Segreaves TYPE OF DRILLING HSA
[illegible]A ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80394° N 73.99190° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/16/06 DATE END 8/16/06

[illegible]MPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

[illegible]SING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb [illegible]MMER FALLING 24 IN.

[illegible]SING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
			24/6	0-0.5	19	asphalt		ASPAHLT	
		S1		0.5-4	11	Medium dense, black, fine to medium SAND, some fine Gravel, trace Silt.			0.0
					12				
[illegible]0					11				
			24/2	2-4	13	Medium dense, black, fine to medium SAND, some fine Gravel, trace Silt.		FILL	0.0
		S2			16				
					17				
4.0					13				
			24/18	4-6	10	Medium dense, black, fine to medium SAND, some fine Gravel, trace Silt, changing after 6" to brown SILTY CLAY, trace fine SAND (wood, organic material).		▼	0.0
		S3			11				0.0
					25			SILTY CLAY	0.0
[illegible]0					32				
						End of boring @ 6' bgs.			
		S4							
[illegible]0									
10.0									
[illegible].0									
[illegible].0									

GRANULAR SOILS BLOWS/FT	DENSITY
[illegible]-4	VERY LOOSE
4-10	LOOSE
[illegible]-30	MEDIUM DENSE
[illegible]-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

[illegible]OTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

GZA GEOENVIRONMENTAL OF NEW YORK 140 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT 41.0161484.00 i.park Edgewater 45 River Road, Edgewater, NJ	REPORT OF BORING NO. GZA-87 SHEET 1 of 1 FILE NO. 41.0161484.00 CHKD BY DW

BORING CO. ADT
FOREMAN Yuri Nedved
GZA ENGINEER Eugen Cela
BORING LOCATION See Exploration Location Plan
GROUND SURFACE ELEV. _____ DATUM _____
DATE START 8/28/06 DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	SAMPLE PEN/REC (FT)	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	RK
			0-2	cored through concrete slab of building (2' thick)	CONCRETE			
	1	36/36	2-5	Brown fine to coarse Silty SAND.	FILL		NM	1
							NM	
							NM	
							NM	
							NM	
5							NM	2
				End of boring 5' bgs				
10								
15								

REMARKS:

1 - Soil sample was collected from 3 - 3.5 feet bgs.

2- PID readings not available due to instrument calibration problems.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-87

GZA GEOENVIRONMENTAL OF NEW YORK
40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-88
SHEET 1 of 2
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan
GROUND SURFACE ELEV. DATUM
DATE START 8/16/06 DATE END 8/16/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
			1/0	0-2	50/1	asphalt		ASPHALT	
		S1				drilled through obstruction to 5' bgs (observed taffy-like P/A material in drill cuttings to 5' bgs, PID reading of 3.9 ppm).	1.		
2.0									
4.0									
6.0									
			24/6	5-7	28	Medium dense, gray to black, fine to medium SAND, little fine Gravel, trace Silt (brick fragments).			0.0
		S2			18				
					11				
8.0					12				
			24/24	7-9	25	Medium dense, gray to black, medium to coarse SAND some fine Gravel, trace Silt, changing after 1' to brown SILTY CLAY, some fine SAND.			
		S3			22				0.0
					17				0.0
9.0					14			FILL	0.0
			24/24	9-11	10	Loose, gray, medium to coarse SAND, little fine Gravel, trace Silt (glass and brick fragments).			0.0
		S4			7				0.0
					7				0.0
11.0					14				0.0
			24/18	11-13	3	Loose, black fine to coarse SAND, little Silt, trace Gravel.			0.0
		S5			5				0.0
					7				0.0
13.0					7				
			24/12	13-15	4	Very loose, black, fine to coarse SAND, trace Silt.			0.0
		S6			2				0.0
					3				
15.0					2				

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. Sampled P/A material (GZA-88) for PP+40 at 1534.

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

ZA GEOENVIRONMENTAL OF NEW YORK
0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-88
SHEET 2 of 2
FILE NO. 41.0161484.00
CHKD BY DW

RING CO. Summit DRILLING RIG
REMAN Jeff Segraaves TYPE OF DRILLING HSA
ZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan
GROUND SURFACE ELEV. DATUM
DATE START 8/16/06 DATE END 8/16/06

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

ASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb AMMER FALLING 24 IN.

ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
		S7	24/24	15-17	2	Very loose, gray, fine to medium SAND, trace fine Gravel, trace Silt (2" of hard P/A material at bottom of spoon).			0.0
					2				5.8
					3				5.6
7.0					9			FILL	0.0
		S8	24/12	17-19	9	Medium dense, gray, fine to medium SAND, trace fine Gravel, trace Silt.			0.0
					11				0.0
					11				
9.0					11				
		S9	24/24	19-21		Medium dense, gray, fine to medium SAND, trace fine Gravel, trace Silt, changing after 1' to brown SILTY CLAY.			0.0
									0.0
1.0								SILTY CLAY	97.5
						End of boring @ 21' bgs.			34.0
3.0									
25.0									
7.0									
9.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-89
SHEET 1 of 1
FILE NO. 41.0181484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80388° N 73.99318° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/21/06 DATE END 8/21/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/18	5-7	5	Loose, brown, fine to coarse SAND, trace Silt.			0.0
					5				0.0
					5				0.0
7.0					4				
		S2	24/18	7-9	5	Loose, black, fine to coarse SAND, some fine Gravel (some crushed hard P/A material through out spoon).			0.0
					5				48.6
					5		1	FILL	52.2
9.0					4				
			24/24	9-11	10	Loose, black, fine to coarse SAND, some fine Gravel (some crushed hard P/A material through out spoon).			
					15				0.0
					12				0.0
11.0					10				0.0
		S3	24/4	11-13	5	Slough			0.0
					7				0.0
					7				
13.0					9				
		S4	24/14	13-15	10	Stiff, gray to black, SILTY CLAY (organic material).			0.0
					9			SILTY CLAY	0.0
					7				0.0
15.0					8		2		

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:
1. Sampled GZA-89 (8-8.5) and (8-9) for PP+40.
2. End of boring @ 15' bgs.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-89

GZA GEOENVIRONMENTAL OF NEW YORK
140 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-90
SHEET 1 of 4
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO. Summit DRILLING RIG
FOREMAN Jeff Segreaves TYPE OF DRILLING HSA
GZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80410° N 73.99261° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/23/06 DATE END 8/23/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5' bgs			
2.0									
4.0									
5.0								▼	
		S1	24/6	5-7	7	Loose, gray, fine to coarse SAND, trace fine Gravel, trace Silt.			0.0
					6				
					5				
7.0					4				
		S2	24/24	7-9	10	Loose, gray, fine to coarse SAND, trace fine Gravel, trace Silt.		FILL	0.0
					10				0.0
					9				0.0
9.0					8				1.3
		S3	24/24	9-11	15	Medium dense, gray, fine to coarse SAND, trace fine Gravel, trace Silt.			0.0
					12				0.0
					10		1.		18.3
11.0					9				4.4
		S4	24/6	11-13		Brown to black, fine to coarse SAND, some fine Gravel, trace Silt (4" geotextile fabric with P/A material at bottom of spoon).			97.0
									43.3
13.0									
		S5	24/6	13-15	30	Very stiff, gray SILTY CLAY (organic material).			3.3
					25				
					20			SILTY CLAY	
15.0					10				

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

1. Sampled GZA-90 (10-10.5') for PP+40 at 1306.

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED. FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-90

ZA GEOENVIRONMENTAL OF NEW YORK
0 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-90
SHEET 2 of 4
FILE NO. 41.0161484.00
CHKD BY DW

RING CO.	Summit	DRILLING RIG	
REMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
ZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80410° N 73.99261° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/23/06 DATE END 8/23/06

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

ASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb AMMER FALLING 24 IN.

ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
		S6	24/18	15-17		Brown to gray SILTY CLAY.			41.3
									54
									188
7.0									
								SILTY CLAY	
0.0									
0.0									
		S7	24/24	20-22		Brown to gray SILTY CLAY.			15.5
									32
									4.3
22.0									8.1
0.0									
25.0									
		S8	24/18	25-27	3	Very soft, orange/brown to gray SILTY CLAY.			1.2
					2				15.3
					1				8.8
7.0					1				
0.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
0-30	MEDIUM DENSE
0-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

OTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-90
SHEET 3 of 4
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80410° N 73.99261° W)
GROUND SURFACE ELEV. ____ DATUM ____
DATE START 8/23/06 DATE END 8/23/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN/.REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
30.0									
			24/18	30-32	3	Very soft, orange/brown to gray SILTY CLAY.			4.5
		S9			2				157
					1				8.9
32.0					1				
								SILTY CLAY	
34.0									
35.0									
			24/18	35-37	WOH	Very loose, brown, fine SAND AND SILT.			0.0
		S10			WOH				0.0
					2				0.0
37.0					1				
38.0									
								SAND AND SILT	
40.0									
			24/18	40-42	10	Medium dense, brown, fine SAND AND SILT.			0.0
		S11			8				0.0
					6				0.0
42.0					6				
44.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

BORING NO. GZA-90

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001

ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-90
SHEET 4 of 4
FILE NO. 41.0161484.00
CHKD BY DW

BORING CO.	Summit	DRILLING RIG	
FOREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
GZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80410° N 73.99261° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/23/06 DATE END 8/23/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
45.0									
								SAND AND SILT	
			24/18	45-47	10	Dense, brown fine SAND AND SILT (broken pieces of rock bottom 6").			0.0
					8				0.0
					76				0.0
47.0					100/3			BEDROCK	
						End of boring @ 47' bgs.			
49.0									
50.0									
52.0									
53.0									
55.0									
57.0									
59.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

ZA GEOENVIRONMENTAL OF NEW YORK
40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-01
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

DRING CO.	Summit	DRILLING RIG	
DREMAN	Jeff Segreaves	TYPE OF DRILLING	HSA
ZA ENG.	Meredith Hayes		

BORING LOCATION See Exploration Location Plan (40.80426° N 73.99222° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/16/06 DATE END 8/16/06

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF
3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

ASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb
AMMER FALLING 24 IN.

ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
			24/18	0-0.5	12	asphalt		ASPHALT	
		S1		0.5-2	14	Medium dense, brown fine to medium SAND, little fine Gravel, trace Silt.			0.0
					11				0.0
.0					11				0.0
			24/24	2-4	16	Medium dense, brown, fine to medium SAND, little Silt, little fine Gravel.			
		S2			16			FILL	
					21				
.0					27				
						drilled through obstruction			
.0									
			24/6	5-7	17	Medium dense, brown, fine to medium SAND, little fine Gravel, trace Silt.			0.0
		S3			11				
					9				
.0					9				
			24/18	7-9	12	Medium dense, brown, fine to medium SAND, little Silt, little fine Gravel, changing after 6" to black, medium SAND, some fine Gravel, trace Silt (slight odor).			0.0
		S4			9				0.0
					11				0.6
.0					11				
			24/6	9-11	3	Very loose, black, medium SAND, some fine Gravel, trace Silt (slight odor).			0.0
					2				
					2				
1.0					3				
			24/6	11-13	5	Medium stiff, brown to gray, SILTY CLAY (wood, organic material, slight organic odor).			0.0
					7			SILTY CLAY	
					5				
13.0					4				
						End of boring @ 13' bgs.			
15.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA GEOENVIRONMENTAL OF NEW YORK
40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
NGINEERS AND SCIENTISTS

PROJECT

REPORT OF BORING NO. GZA-92
SHEET 1 of 1
FILE NO. 41.0161484.00
CHKD BY DW

ORING CO. Summit DRILLING RIG
OREMAN Jeff Segreaves TYPE OF DRILLING HSA
ZA ENG. Meredith Hayes

BORING LOCATION See Exploration Location Plan (40.80372° N 73.99288° W)
GROUND SURFACE ELEV. DATUM
DATE START 8/21/06 DATE END 8/21/06

AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF 3" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb HAMMER FALLING 24 IN.

ASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH	CASING BLOWS	SAMPLE SPOON NO.	SAMPLE PEN./REC	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	R K	STRATUM DESCRIPTION	FIELD TESTING
						vacuum excavated to 5'			
2.0									
5.0									
		S1	24/18	5-7	5	Loose, brown, fine to coarse SAND, little Silt, trace fine Gravel.			0.0
					6				2.6
					7				17.3
7.0					6				
		S2	24/20	7-9	6	Loose, brown to black, fine to coarse SAND, little Silt, trace fine Gravel changing after 1' to black, fine to coarse SAND, little Silt (crushed hard P/A material bottom 6" of spoon, sheen and odor).			0.0
					8				2.1
					10				15.7
9.0					14				11
		S3	24/24	9-11	12	Medium dense, black, fine to coarse SAND, little Silt, changing after 6" to brown to black, fine to coarse SAND, little Silt (and crushed hard P/A material), changing after 1' to white/brown SILTY CLAY (brick fragments, 2" geotextile fabric with P/A material at bottom of spoon).			0.0
					18				0.0
					18				2.6
11.0					10				0.0
		S4	24/24	11-13	5	Soft, brown SILTY CLAY.			0.0
					4				0.0
					3			SILTY CLAY	0.0
13.0					4				0.0
		S5				End of boring @13' bgs.			
15.0									

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	DENSE
>50	VERY DENSE

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

REMARKS:

NOTES:
1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA GEOENVIRONMENTAL OF NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT: Spink Edgewater

REPORT OF BORING NO. GZA-93/MW-52
SHEET 1 of 2
FILE NO. 14.0061464.00
DRILLED BY: DW

BORING CO.	Summit	BORING LOCATION	See Exploration Location Plan
FOREMAN	Jeff Segreaves	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Meredith Hayes	DATE START 8/22/06	DATE END 8/22/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 LB HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH (FT)	CASING BLOWS	SAMPLE NO	SAMPLE REC/RUN (IN)	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION (SUBMISTER, CLASSIFICATION)	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	PID (PPM)
						vacuum excavated to 5'		CAP		
2.0										
4.0										
5.0										
			24/6	5-7	10	Medium dense, brown, fine to coarse SAND, little Silt (brick fragments).			0.0	
					9					
					8					
7.0					7					
			24/24	7-9	10	Medium dense, black, fine to medium SAND, trace Silt (2" geotextile fabric with P/A material at bottom).	FILL		0.0	
					8				0.0	
					6				0.0	
9.0					5				0.0	
			24/24	9-11	WOH	Very loose, black to brown, fine to coarse SAND, little Silt, trace fine Gravel (strong sulfur odor).			0.0	
					WOH				0.0	
					10				0.0	
11.0					15				6.2	
			24/24	11-13	10	Loose, brown, fine to medium SAND, little Silt, trace fine Gravel, changing after 1' to black, fine to coarse SAND, trace Silt.			3.0	
					8				3.2	
					6				5.2	
13.0					6				32.6	
			24/24	13-15	26	Medium dense, brown fine SAND, some Silt, little fine Gravel, changing after 1'; to black, fine to medium SAND, little Silt (brick and concrete fragments).			0.0	
					30				0.0	
					28				0.0	
15.0					23				0.0	

NO FREE PRODUCT OBSERVED

GRANULAR SOILS BLOWS/FT	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	VERY DENSE
>50	

COHESIVE SOILS BLOWS/FT	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	MEDIUM STIFF
8-15	STIFF
15-30	VERY STIFF
>30	HARD

REMARKS:

NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	PROJECT Lpark/Edgewater 45 River Road Edgewater, New Jersey	REPORT OF BORING NO. GZA-03/MW-52 SHEET 2 of 2 FILE NO. 41.0188484.00 CHKD BY: JDW

BORING CO. Summit — BORING LOCATION See Exploration Location Plan

FOREMAN Jeff Segreaves — GROUND SURFACE ELEV. — DATUM

GZA ENGINEER Meredith Hayes — DATE START 8/22/06 — DATE END 8/22/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 LB HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS				
DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH (FT)	CASING BLOWS	SAMPLE NO	PEN/REC	DEPTH (FT)	BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	PID/K
			24/24	15-17		Black, fine to coarse SAND, little Silt (2" hard P/A material then 1" gray SILTY CLAY at bottom).	FILL		0.0 0.0 0.0	
17.0							SILTY CLAY		0.0	
						End of boring @ 17'.				
19.0										
21.0										
23.0										
25.0										
27.0										
29.0										

GRANULAR SOILS	
BLOWS/FT.	DENSITY
0-4	VERY LOOSE
4-10	LOOSE
10-30	MEDIUM DENSE
30-50	VERY DENSE

COHESIVE SOILS	
BLOWS/FT.	CONSISTENCY
<2	VERY SOFT
2-4	SOFT
4-8	MEDIUM STIFF
8-15	STIFF
15-30	VERY STIFF
>30	HARD

REMARKS:

NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

BORING NO. GZA-03/MW-52

GZA GEOENVIRONMENTAL OF NEW YORK
40 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT	REPORT OF BORING NO. GZA-94
41.0161484.00	SHEET 1 of 1
i.park Edgewater	FILE NO. 41.0161484.00
45 River Road, Edgewater, NJ	CHKD BY DW

BORING CO. ADT
FOREMAN Yuri Nedved
GZA ENGINEER Eugen Cela
BORING LOCATION See Exploration Location Plan
GROUND SURFACE ELEV. ____ DATUM ____
DATE START 8/28/06 DATE END 8/28/06

SAMPLER: Geoprobe™ - 2" diameter, 5-foot long, clear acetate liner, installed with a hydraulic hammer.

DEPTH (FT)	SAMPLE NO	SAMPLE PEN/REC (FT)	SAMPLE DEPTH (FT)	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R K
	1	60/40	0-5	Brown fine to coarse Silty SAND, little fine Gravel, fragments of brick and concrete, little sulfur-like odor (first 20" of split spoon recovery), black fine to coarse Silty SAND, some Gravel, little sulfur-like odor (last 20" of split spoon recovery).	FILL		NM	1
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
5							NM	2
	2	36/30	5-8	Black, fine to coarse Silty SAND. Sulfur-like odor.			NM	
							NM	
							NM	
							NM	
							NM	
							NM	
							NM	
				End of boring @ 8' bgs				
10								
15								

REMARKS:

1- Soil sample was collected from 4 - 4.5 feet bgs (6" above GW table)

2 - PID readings not available due to instrument calibration problems.

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLE MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

GZA GEOENVIRONMENTAL OF NEW YORK
440 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001
ENGINEERS AND SCIENTISTS

PROJECT
Sperry Edgewater
45 River Road
Edgewater, New Jersey

REPORT OF BORING NO. MW-53
SHEET 1 OF 1
FILE NO. 04.0161.04.00
BORED BY: RW

BORING CO.	Summit	BORING LOCATION	See Exploration Location Plan
FOREMAN	Jeff Segreaves	GROUND SURFACE ELEV.	DATUM
GZA ENGINEER	Meredith Hayes	DATE START 8/21/06	DATE END 8/21/06

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 IN

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 LB HAMMER FALLING 24 IN.

CASING SIZE:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

DEPTH (FEET)	CASING BLOWS	SAMPLE NO	SAMPLE PEN/REC	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	STRATUM DESCRIPTION	EQUIPMENT INSTALLED	FIELD TESTING	R PI
						HSA to 15.5'		CAP		
2.0										
4.0										
5.0										
6.0										
8.0										
10.0										
12.0										
14.0										1.

GRANULAR SOILS
BLOWS/FT DENSITY
0-4 VERY LOOSE
4-10 LOOSE
10-30 MEDIUM DENSE
30-50 VERY DENSE

COHESIVE SOILS
BLOWS/FT CONSISTENCY
<2 VERY SOFT
2-4 SOFT
4-8 MEDIUM STIFF
8-15 STIFF
15-30 VERY STIFF
>30 HARD

REMARKS:

1. End of boring @ 15'.

NOTES:

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED; FLUCTUATIONS OF GROUNDWATER TABLEMAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING NO. MW-53

GZA GEOENVIRONMENTAL OF NEW YORK ENGINEERS AND SCIENTISTS 320 NINTH AVENUE, 18TH FLOOR, NEW YORK, NY 10001	Project Lpark Edgewater 45 River Road Edgewater, NJ	WELL ID SHEET FILE NO DRAWN BY	MW-01 1 of 1 41.0481484.00 MH

COLUMN OF WATER IN WELL:
Depth to Bottom (ft) - Static Water Level (ft)
= 12.41 - 3.21
Water Column (T): 9.2 (ft)

SCREENED INTERVAL:
PURGE DEPTH (ft): 8.2
PURGE RATE (ml/min): 100-500 ml/min
SAMPLER: EC
DATE SAMPLED: 9/8/2006

WATER QUALITY:

Time	Elapsed Time	Depth to Water (ft) (<0.3' change)	pH (+/- 0.1)	Specific Conductivity (mS/cm) (+/- 3%)	Turbidity (NTU) (+/-10% or <1)	Dissolved Oxygen (mg/l) (+/-10%)	Temp (°C) (+/-3%)	ORP (+/-10 mV)
15:00	NA	3.22	NA	NA	NA	NA	NA	NA
15:10	10	3.40	6.86	3.180	40.5	0.00	21.78	-361
15:15	15	3.40	6.78	3.160	19.5	0.00	21.95	-375
15:20	20	3.40	6.83	3.170	11.5	0.00	22.03	-384
15:30	30	3.42	6.90	3.170	20.0	0.00	22.09	-372

NOTES AND OBSERVATIONS:
Observed little sheen, sulfur like odor, yellow color, small black floating deposits.

GZA GEOENVIRONMENTAL OF NEW YORK 320 NINTH AVENUE, 11TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	Project Ironside Edgewater 46 River Road Edgewater, NJ	WELL ID: MW-02 SHEET: 1 of 1 FILE NO.: 41.0161484.00 CHKD BY: MH

COLUMN OF WATER IN WELL:
Depth to Bottom (ft) - Static Water Level (ft)
= 13.76 - 3.48
Water Column (T): 10.28 (ft)

SCREENED INTERVAL:
PURGE DEPTH (ft): 8.5
PURGE RATE (ml/min): 100-500 ml/min
SAMPLER: EC
DATE SAMPLED: 9/8/2006

WATER QUALITY:

Time	Elapsed Time	Depth to Water (ft) (<0.3' change)	pH (+/- 0.1)	Specific Conductivity (mS/cm) (+/- 3%)	Turbidity (NTU) (+/-10% or <1)	Dissolved Oxygen (mg/l) (+/-10%)	Temp (°C) (+/-3%)	ORP (+/-10 mV)
12:45	NA	3.52	NA	NA	NA	NA	NA	NA
12:51	5	3.51	6.94	3.230	-5.0	0.00	22.90	-212
12:56	10	3.51	6.86	3.490	-5.0	0.00	21.31	-273
13:01	15	3.53	6.85	3.400	973.0	0.00	20.16	-304
13:06	20	3.55	6.83	3.420	839.0	0.00	19.91	-320
13:15	29	3.51	6.94	3.660	517.0	0.27	22.36	-334
13:20	35	3.51	6.90	3.670	328.0	0.00	21.89	-346
13:25	40	3.51	6.91	3.710	414.0	0.00	23.03	-355
13:30	45	3.54	6.79	3.430	109.0	0.00	19.71	-442
13:35	50	3.55	6.80	3.420	74.0	0.00	19.64	-466
13:40	55	3.56	6.82	3.410	74.9	0.00	19.55	-485
13:45	60	3.56	6.81	3.420	58.9	0.00	19.55	-496
13:50	65	3.56	6.81	3.420	38.9	0.00	19.56	-499
13:55	70	3.56	6.81	3.430	34.2	0.00	19.55	-502
14:00	75	3.56	6.81	3.430	29.0	0.00	19.56	-508

NOTES AND OBSERVATIONS:
Observed little sheen, sulfur like odor, small black floating deposits. Duplicate sample 2DUP 090806 collected for VOCs.

GZA GEOENVIRONMENTAL OF NEW YORK 320 NINTH AVENUE, 10TH FLOOR, NEW YORK, NY 10001 ENGINEERS AND SCIENTISTS	Project Upper Edgewater 145 River Road Edgewater, NJ	WELL ID: MW-3 SHEET: 1 of 1 FILE NO.: 01.0161484.00 CHKD BY: MH

COLUMN OF WATER IN WELL:
Depth to Bottom (ft) - Static Water Level (ft)
= 12.76 - 2.7
Water Column (T): 10.06 (ft)

SCREENED INTERVAL:
PURGE DEPTH (ft): 7.7
PURGE RATE (ml/min): 100-500 ml/min
SAMPLER: EC
DATE SAMPLED: 9/8/2006

WATER QUALITY:

Time	Elapsed Time	Depth to Water (ft) (<0.3' change)	pH (+/- 0.1)	Specific Conductivity (mS/cm) (+/- 3%)	Turbidity (NTU) (+/-10% or <1)	Dissolved Oxygen (mg/l) (+/- 10%)	Temp (°C) (+/-3%)	ORP (+/-10 mV)
11:06	NA	2.43	NA	NA	NA	NA	NA	NA
11:16	10	2.48	4.26	0.000	55.7	9.32	22.29	153
11:21	15	2.81	4.19	0.000	52.6	9.62	21.02	137
11:26	20	2.80	4.16	0.000	52.9	9.68	20.68	130
11:31	25	2.80	4.18	0.000	53.1	9.70	20.26	125
11:36	30	2.78	4.23	0.000	54.0	9.77	20.05	126
11:41	35	2.77	4.25	0.000	54.5	9.73	20.13	129
11:46	40	2.77	4.28	0.000	55.2	9.72	20.15	132
11:51	45	2.77	4.31	0.000	55.7	9.70	20.19	134

NOTES AND OBSERVATIONS:
Observed little sheen and sulfur like odor. Duplicate sample collected and labeled DUP 090806.

APPENDIX F

WELL FORMS A AND B

DWR-133M
5/0

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Permit No. ____________

Mail To:
NJDEP
BUREAU OF WATER ALLOCATION
P BOX 426
T ENTON, NJ 08625-0426

COORD #: 26.14.278

Owner: 1 park Edgewater LLC
Address: 485 Putnam Ave
Greenwich CT 06830

Name of Facility: 1 park Edgewater
Address: 45 River Road
Edgewater

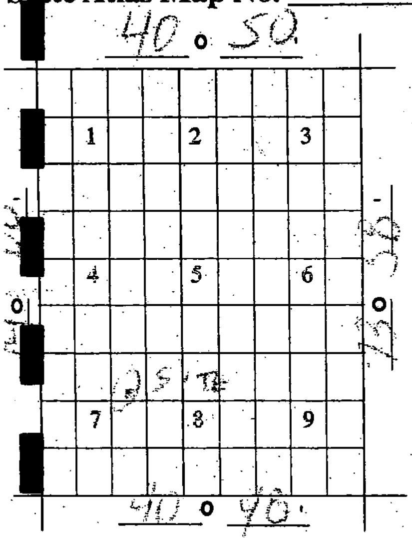
Driller: SUMMIT DRILLING CO., INC.
Address: 9W Chimney Rock Road
Bound Brook, NJ 08805

Diameter of Well(s): 2 Inches	Proposed Depth of Well(s): 20 Feet
# of Wells Applied for (max. 10): 3	Will pumping equipment be utilized? YES ☐ NO ☒
Type of Well (see reverse): Monitor	If Yes, give pump capacity: — cumulative GPM

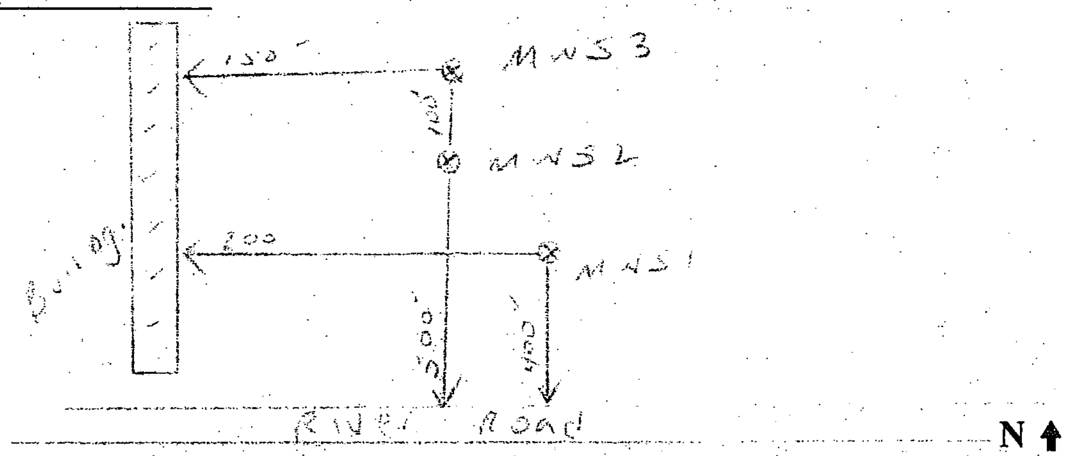
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
1	99	Edgewater	Bergen

State Atlas Map No. 26



Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: ________ EASTING: ________
OR
LATITUDE: __°__'__" LONGITUDE: __°__'__"

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Other (explain) ____________
- ☐ Spill Site
- ☒ ISRA Site
- ☐ CERCLA (Superfund) Site

CASE I.D. Number: E20040267

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J. D.E.P.
JUN 7 2006
BUREAU OF WATER SYSTEMS & WELL PERMITTING

FOR D.E.P. USE ☐ Issuance of this permit is subject to the conditions attached. (see next page) ☒ For monitoring purposes only ☐

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.
In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.

Date: 5-23-06 Signature of Driller: Matthew Raab Registration No. J1577

G2A Signature of Property Owner: [signature]

COPIES: Water Allocation - White Health Dept. - Yellow Owner - Blue Driller - White

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: NATIONAL RE/SOURCES

Location: 45 RIVER ROAD, EDGEWATER, NJ

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: ___-_____-__
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-51

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 73°59'34.9" Latitude: North 40°48'13.6"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 718120 East 632465

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 7.54'

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

SANITARY MANHOLE RIM EL. = 10.00' (NGVD1929) : CONVERTED TO

Significant observations and notes: NAVD 1988 EL. = 8.95'

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

W. B. _____ 10/06/06
PROFESSIONAL LAND SURVEYOR'S SIGNATURE DATE

WAYNE W. BURGETT GS31654
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

132 E. CLINTON ST., CLAYTON, NJ 08312 (856) 881-8677

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: NATIONAL RE/SOURCES

Location: 45 RIVER ROAD, EDGEWATER, NJ

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: ___-_____-__
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-52

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 73°59'32.9" Latitude: North 40°48'13.6"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 718117 East 632619

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 7.84'

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

SANITARY MANHOLE RIM EL. = 10.00' (NGVD 1929) : CONVERTED TO

Significant observations and notes: NAVD 1988 EL. = 8.95'

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

W. B. _____ 10/06/06
PROFESSIONAL LAND SURVEYOR'S SIGNATURE DATE

WAYNE W. BURGETT 45316S4
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

132 E. CLINTON ST., CLAYTON, NJ 08312 (856) 881-8677

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: NATIONAL RE/SOURCES

Location: 45 RIVER ROAD, EDGEWATER, NJ

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: ___-_____-__
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-53

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 73°59'32.3" Latitude: North 40°48'14.5"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 718205 East 632668

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 6.53'

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

SANITARY MANHOLE RIM EL. = 10.00' (NGVD 1929) : CONVERTED TO

Significant observations and notes: NAVD 1988 EL. = 8.95'

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

W. T. _____ 10/06/06
PROFESSIONAL LAND SURVEYOR'S SIGNATURE DATE

WAYNE W. BURGETT 45316S4
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

132 E. CLINTON ST., CLAYTON, NJ 08312 (856) 881-8677

JOB # 18622
CUSTOMER Envirever - G2A
JOB LOCATION 45 River Rd
Edge Water NJ

EISCO-NJ

900 Port Reading Ave.,B-2
Port Reading, NJ 07064
(732) 969-4888 • Fax: (732) 969-9599

T & M No.:
Day: Tue
Date: 11/14/06

PERSONNEL / PER DIEM

NAMES	CODE	START	FINISH	ST	RATE	OT	RATE	RATE	QTY	TOTAL
M. Rothinger	FT	0700	3:30							
									TOTAL	

MATERIALS

TYPE	QTY	RATE	TOTAL
		TOTAL	

EQUIPMENT / TRUCKS

UNIT TYPE	QTY	START	FINISH	HR	RATE		DAILY	TRANS	TOTAL
J-25		0700	3:30						
								TOTAL	

PPE

TYPE	QTY	RATE	TOTAL
		TOTAL	

SUBCONTRACTOR

SUBCONTRACTOR	QTY	START	FINISH	WORK DESCRIPTION
			TOTAL	

DISPOSAL

QTY	DESCRIPTION	MANIFEST#	PRICING	TOTAL
			TOTAL	

DESCRIPTION OF WORK PERFORMED: Picked up 12 drums from overlook
2 trips 11 on each trip

[redacted] SIGNATURE [redacted] CUSTOMER COMMENT [redacted]

Environmental Industrial Services Corp. of New Jersey

Bill of Lading

Original: Not Negotiable
Yellow: Shipping Order Copy
Pink: Memorandum

Shipper No.: _____

Date: 11-14-06.

TO:	FROM:
Consignee MXI	Shipper Unilever.
Street 26319 OLD TAOS RD.	Street 45 River RD.
Destination ABINGDON VA. Zip Code _____	Origin EDGE WATER NJ Zip Code _____

Date: Job # 1862. Vehicle Number

Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Quantity	Units
DM	NON HAZARDOUS SOIL	22	POUNDS.

SHIPPER Unilever.

SIGNATURE Assistant for Edgewater

CARRIER Fisc-NT

SIGNATURE Michael DATE

11/29/2006 16:19 12766230599 MXI ENV PAGE 02

130516 **Environmental Industrial Services Corp. of New Jersey** BR015951

Bill of Lading

Original: Not Negotiable
Yellow: Shipping Order Copy
Pink: Memorandum

Shipper No.:
Date: 11-14-06.

TO:
Consignee MXI
Street 26319 OLD TRAIL RD.
Destination ABINGDON VA. Zip Code
Date:

FROM:
Shipper UNILEVER.
Street 45 RIVER RD.
Origin EDGEWATER NJ Zip Code

Job # 1862.

Vehicle Number J-4

Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Quantity	Units
8 DM	NON HAZARDOUS SOIL UNILNJ-001-BR		POUNDS
14 DM	NON HAZARDOUS WATER UNILNJ-002-SS	2,200	

11-29-06 ② MAUMEE EXPRESS, INC. 11/20/06

SHIPPER UNILEVER ①
SIGNATURE as agent for Unilever, Edgewater

CARRIER EISCO-NJ
SIGNATURE
DATE

z:d